Vol. 910 Number 3

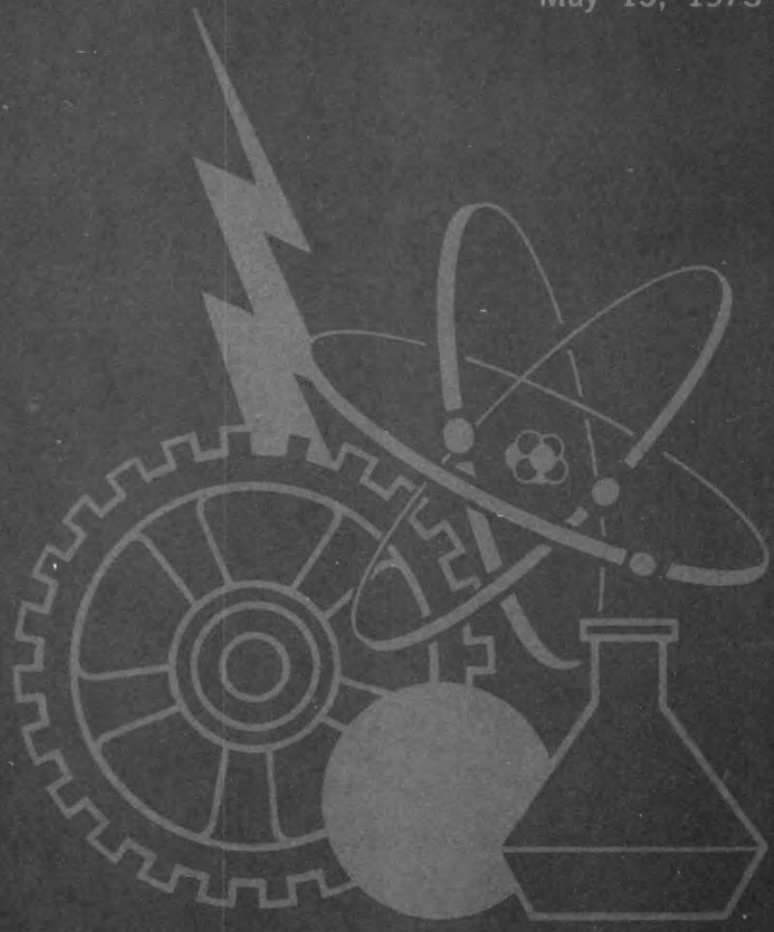
OFFICIAL GAZETTE

of the UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

May 15, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

May 15, 1973 Volume 910 Number 3

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of May 15, 1973

Re. 27,395	3,657,321	3,686,507	3,698,715
Re. 27,466	3,658,717	3,686,962	3,699,077
D. 225,323	3,659,285	3,687,326	3,699,331
3,452,409	3,660,544	3,687,397	3,699,487
3,476,720	3,661,187	3,687,491	3,700,737
3,553,394	3,661,743	3,688,070	3,700,904
3,562,174	3,662,539	3,688,140	3,700,992
3,563,773	3,662,993	3,688,386	3,701,249
3,572,892	3,665,099	3,688,652	3,701,536
3,577,447	3,666,152	3,688,683	3,701,988
3,581,259	3,669,936	3,688,810	3,702,407
3,590,228	3,671,289	3,688,830	3,702,587
3,593,484	3,671,646	3,688,974	3,702,737
3,606,374	3,672,155	3,689,573	3,702,830
3,606,396	3,673,061	3,689,717	3,703,082
3,607,382	3,673,224	3,689,813	3,703,187
3,615,545	3,673,302	3,690,362	3,703,193
3,615,578	3,675,247	3,691,004	3,703,223
3,615,626	3,676,115	3,691,195	3,703,435
3,615,915	3,676,279	3,691,518	3,703,440
3,618,878	3,676,499	3,691,875	3,703,932
3,623,938	3,676,552	3,692,579	3,704,207
3,624,159	3,677,521	3,692,615	3,704,311
3,625,314	3,678,569	3,692,948	3,704,364
3,625,339	3,679,430	3,692,720	3,704,577
3,626,041	3,680,336	3,692,929	3,704,595
3,626,929	3,680,580	3,693,270	3,704,761
3,627,666	3,681,465	3,694,132	3,704,802
3,627,719	3,681,490	3,694,240	3,705,477
3,632,208	3,681,500	3,694,675	3,705,555
3,632,212	3,681,609	3,694,915	3,705,919
3,634,865	3,681,801	3,694,928	3,705,951
3,635,657	3,683,135	3,695,037	3,705,969
3,635,780	3,684,197	3,695,941	3,706,013
3,637,631	3,684,783	3,695,968	3,706,626
3,637,700	3,684,794	3,697,574	3,706,846
3,640,118	3,685,045	3,697,801	3,706,913
3,641,234	3,685,248	3,697,958	3,706,979
3,644,513	3,685,345	3,698,037	3,706,997
3,649,899	3,685,413	3,698,055	3,707,069
3,652,692	3,685,518	3,698,067	3,707,229
3,654,990	3,685,766	3,698,257	3,707,358
3,655,722	3,685,770	3,698,350	3,707,470
3,655,799	3,685,879	3,698,481	3,707,512
3,657,213	3,686,264	3,698,638	3,707,592
3,657,219	3,686,497	3,698,700	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or micrrofiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th Street SW., Washington, D.C. 20590

Patent application 230,702. Noncontracting Angular Position Detector. Filed Mar. 1, 1972. PC $3/MF $0.95.

Patent application 241,840. Anti-Reflective Glass. Filed Apr. 6, 1972. PC $3/MF $0.95.

Patent application 184,828. A Railroad Crossing Signalling System. Filed Sept. 29, 1972. PC $3/MF $0.95.

Patent application 229,084. Focusing Protective Enclosure for Ultrasonic Transducer. Filed Feb. 24, 1972. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 326,364. Automatic Inoculating Apparatus. Filed Jan. 24, 1973. PC $3/MF $0.95.

Patent application 324,029. Technique for Recovery of Voice Data From Heat Damaged Magnetic Tape. Filed Jan. 16, 1973. PC $3/MF $0.95.

Patent application 315,070. Binary Concatenated Coding System. Filed Dec. 14, 1972. PC $3.25/MF $0.95.

Patent application 315,048. An Apparatus for Establishing Flow of Fluid Mass Having a Known Velocity. Filed Dec. 14, 1972. PC $3.25/MF $0.95.

Patent application 325,784. Reconstituted Asbestos Matrix, Filed Jan. 22, 1973. PC $3/MF $0.95.

Patent application 370,419. Self-Cycling Fluid Heater. Filed Nov. 6, 1970. Patented Jan. 2, 1973, Not available NTIS.

[FR Doc. 73–7349; Filed 4–17–73; 8:45 am]

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 1, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-27-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-03-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-10-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Swiches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-20-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-01-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-10-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-05-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	7-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-05-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-07-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-29-72

Expiration of patents: The patents within the range of numbers indicated below expire during May 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,743,442 to 2,748,387, inclusive
Plant Patents..... Numbers 1,472 to 1,480, inclusive

PLANT PATENTS

GRANTED MAY 15, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,331
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed May 3, 1971, Ser. No. 139,794
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety (cultivar) of a miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by bush and flowers resembling the Yellow Necklace miniature rose (not patented) in general size and form, the color generally being deeper yellow with orange shadings, the general color effect of the bud and freshly opened flower being soft orange to gold yellow; and further characterized by a plant which is vigorous and compact in growth, easy to propagate from cuttings, with abundant medium small foliage of a light to medium green color and an abundance of bloom borne almost continuously throughout the growing season with flowers borne singly or several to the stem.

3,332
MAHONIA SHRUB

Lee W. Lenz, Claremont, Calif., assignor to Rancho Santa Ana Botanic Garden

Filed June 4, 1971, Ser. No. 149,894
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct hybrid of the shrub genus Mahonia, substantially as shown and described, characterized by a combination of features not found combined in previously known members of the genus, these features being the shape and profusion of the flowers, physical characteristics of the branches, the shape and peculiar color of the fruit, and the combination of large size and dark green leaves.

3,333
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 11, 1971, Ser. No. 170,934
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—80 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized as to uniqueness by its bright lavender pink flower color that is bright and lively even under incandescent lights, but during fading, still holds a uniform color during high temperature periods; unique large cactus-like decorative flowers three to four inches in diameter; plants that average 5 breaks per pinched plant; a spreading habit equal to or greater than the growth type of the Mandalay family; a unique deeply indented foliage, and by it early fast response, making it one of the most efficient varieties to grow from the standpoint of total crop time.

3,334
CHRYSANTHEMUM PLANT

Percy S. Helveston, Fort Myers, Fla., and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Percy S. Helveston, Fort Myers, Fla.

Filed Aug. 20, 1971, Ser. No. 173,704
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particular as to its uniqueness when compared to the parent cultivar Show-Off by its flowers which are yellow in color and slightly larger, and which do not mature as rapidly and hold their form longer when flowered in low light periods.

3,335
AZALEA PLANT

Thomas G. Harcharik, Salinas, Calif., and Walter W. Knicely, Barberton, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 25, 1971, Ser. No. 175,013
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—57 1 Claim

1. A new and distinct variety of azalea characterized particularly as to uniqueness when compared to its parent cultivar Whistler by its attractive medium pink color.

3,336
GRAPEVINE

John M. Garabedian, 3158 Hamilton St., Fresno, Calif. 93712

Filed Aug. 26, 1971, Ser. No. 175,412
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—47 1 Claim

A grapevine of medium vigor, upright, open, hardy, and productive, with a medium size trunk, straight medium length canes, glabrous cordate leaves of medium size and medium green color, and bearing very early ripening grapes of very good qualtity; the grapes—in harvest maturity approximately three weeks before the Cardinal (unpatented)—being borne in long, tapering clusters of medium size and medium width, and the berries being dark red, strongly adherent, uniform, medium to large size, round to slightly elongated in form, with medium firm, tender, juicy, sprightly, vinous flesh.

3,337
CHRYSANTHEMUM PLANT

Douglas K. Dillon, Bloomsburg, Pa., and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Douglas K. Dillon, Bloomsburg, Pa.

Filed Sept. 14, 1971, Ser. No. 180,530
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—79 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Show-Off by its red-bronze flower color.

PATENTS

GRANTED MAY 15, 1973

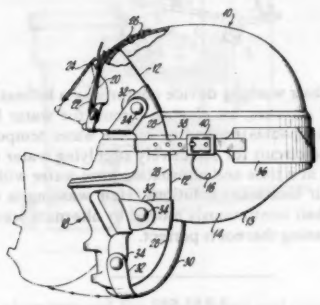
GENERAL AND MECHANICAL

3,732,574

PROTECTIVE HEAD GEAR

Creighton J. Hale, Williamsport, Pa., assignor to Little League Baseball Inc., Williamsport, Pa.

Filed Apr. 21, 1971, Ser. No. 136,137
Int. Cl. A42b *1/08*
U.S. Cl. 2—9 **5 Claims**



Protective head gear comprising a helmet having a face mask hingedly connected thereto at a central upper location, with the forward edge of the helmet being retained in substantial registration with the rear edge of said face mask portion by elastic connecting means.

3,732,575

SAFETY GLOVE

Steve Pakulak, Eugene, Oreg., assignor to Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 213,977
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 R **5 Claims**

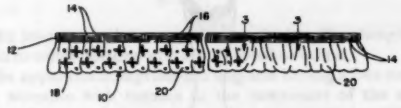
A safety glove, in which is embedded steel caps and steel cylinders located at the finger tips, and between the finger joints, respectively so as to protect the fingers of the wearer. The inner liner of the glove may be made of a cloth material and the outer covering of the glove may be leather, or for waterproof purposes, plastic or rubber.

3,732,576

ELASTIC FABRIC MATERIAL FOR HOME USE AND METHOD OF EMPLOYING SAME IN THE RECONSTRUCTION AND CONSTRUCTION OF GARMENTS

Mary L. Guthier, 522 S. Ninth Street, Reading Pa.

Filed June 17, 1971, Ser. No. 154,077
Int. Cl. A41d *1/14*
U.S. Cl. 2—221 **3 Claims**



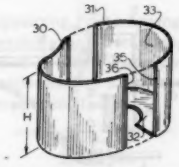
A fabric material for use as an elastic waistband for garments and primarily for the home repair of garments. The material consists of factory-prepared lengths of narrow fabrics having stretchable elastic bands, of less width than the fabric, secured adjacent a margin of the fabric by lines of stitches of a character to preserve the stretch characteristics of the band. In the method of employing the material, as in the repairing of a garment having a defective waistband, the original waistband is severed from the remainder of the garment and a free margin of the length of material is sewn to the margin of the remainder of the garment defined by the severed edge. This requires only the stitching of cloth to cloth thus avoiding the sewing of an elastic band to cloth, an operation which the usual home sewing machine is not equipped to perform. The fabric material may also be employed in the home construction of new garments and may be supplied with, or without, other materials in the form of a kit.

3,732,577

WATER SAVING CUP DEVICE FOR TOILET TANKS

Jacob R. Moon, Hillsborough, N.C., assignor to Moon Water Saver, Inc., Hillsborough, N.C.

Filed Apr. 19, 1972, Ser. No. 245,532
Int. Cl. E03d *1/20, 1/22, 1/30*
U.S. Cl. 4—18 **8 Claims**



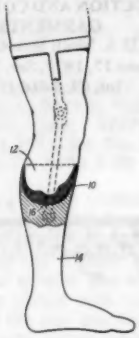
A thin, flexible-walled, cup-like vessel surrounds a flush valve in a conventional closet water tank forming an open ended water column extending upward around the valve assembly thereby preventing water stored in the base of the tank outside the column from being discharged during flushing.

3,732,578

DIAGNOSTIC AND INTERFACIAL PAD FOR USE WITH THE SOCKET OF A PROSTHETIC DEVICE

Herman G. Pollack, 44 Stoneham Drive, West Hartford, Conn.

Filed Mar. 1, 1971, Ser. No. 119,751
Int. Cl. A61f *1/02*; A61b *5/10*
U.S. Cl. 3—19 8 Claims



An interfacial pad adapted to be inserted between a prosthetic device and a body member is provided comprising a relatively low density, substantially non-resilient, deformable foam pad exhibiting a cushioning characteristic and a memory characteristic responsive to locally applied forces.

ERRATUM

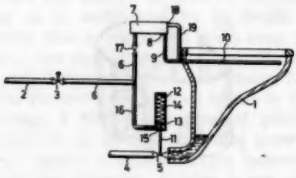
For Class 4—18 see:
Patent No. 3,732,577

3,732,579

VACUUM WATER-CLOSET

Claes G. Gustaf Allander, and Lars E. Bengtsson, both of Stockholm, Sweden, assignors to AB Gustabsbergs Fabriker, Gustabsverg, Sweden

Filed June 22, 1971, Ser. No. 155,557
Int. Cl. E03d *1/36*
U.S. Cl. 4—41 3 Claims



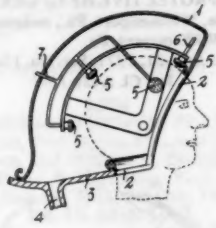
A vacuum water-closet, wherein a buffer receptacle is connected to a flush-water feed pipe between an inlet valve and a flushing nozzle, said buffer receptacle delivering a predetermined quantity of water to the water-closet after each closing of said inlet valve.

3,732,580

HAIR WASHING MACHINE

Ernesto Fava, Via Arce 40, Salerno, Italy

Filed June 18, 1971, Ser. No. 154,465
Claims priority, application Italy, July 1, 1970, 26824 A/70
Int. Cl. A61h *33/00*
U.S. Cl. 4—159 7 Claims



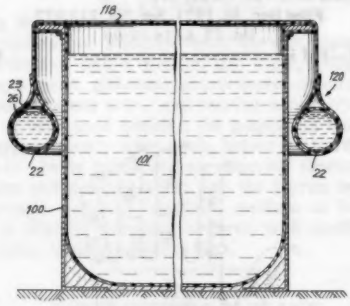
Automatic hair washing device comprising a helmet having a plurality of showers, an electric circuit for water heating with power dissipation depending on the water temperature, and an electric circuit for selectively supplying water only to some showers at a time and alternating pure water with water containing hair treatment solutions. Hair washing is carried out with said hair continuously moved by alternate water jets, so that the cleaning thereof is perfect.

3,732,581

POOL COVER

Joseph J. Pitti, Wantagh, and George A. Tassone, Brooklyn, both of N.Y., assignors to Atreo Manufacturing Co., Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 57,279, July 22, 1970, Pat. No. 3,667,070. This application Aug. 9, 1971, Ser. No. 169,973
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.12 9 Claims



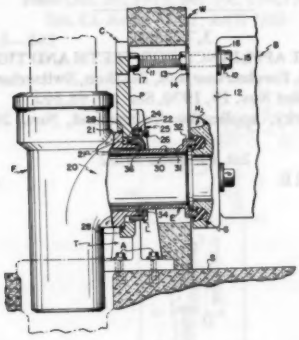
A pool cover for keeping soot and other particles out of a pool and for preventing unwanted usage of the pool. The pool cover is made of a flexible, durable material and has a central cover portion adapted to rest on the surface of the pool. A border region is secured to the outer edge of the central cover portion and retains a plurality of separate and independent liquid containers capable of being filled with a suitable liquid, such as water. The border region of the pool cover rests on, or is draped over, the peripheral edge of the pool and is too heavy to be removed by a child of tender years. If one of the liquid containers inadvertently ruptures, the others will not be affected and the pool cover will be maintained in place.

3,732,582

CLOSE CLOSET FITTING AND CLOSET CARRIER WITH BOWL CONNECTION

Roger L. Mielbeck, La Porte, and Nicholas G. Scheuer, Michigan City, both of Ind., assignors to Josam Manufacturing Co., Michigan City, Ind.

Filed Jan. 6, 1971, Ser. No. 104,323
Int. Cl. E03d *11/00*
U.S. Cl. 4—252 R 5 Claims



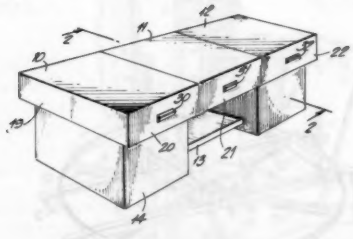
In a close type soil line closet fitting and closet bowl carrier combination for a wall hung bowl, the fitting has a bowl connection branch having external front lug formations engaging the carrier back, and having an externally threaded reduced end projecting through a carrier aperture to receive, axially adjustably telescoped in the branch, a male threaded bowl-coupling extension threaded through a female-threaded reduced portion of a collar as a compression nut with a counterbore threaded onto the branch end and advanceable into the carrier aperture; whereby a gasket in the counterbore bottom circumferentially seals the branch end with the extension. The collar, to serve as a fitting-clamping lock nut, has three equally angularly spaced radial lugs through which set screws are threaded against the carrier. The extension passage inside diameter contracts at its outer end to provide a reinforcing thickened wall section and a broader gasket sealing end face.

3,732,583

CONVERTIBLE TABLE BED

Emelba E. Jones, 1633 47th St., Los Angeles, Calif.

Filed Aug. 23, 1971, Ser. No. 174,072
Int. Cl. A47c *13/35, 4/02*
U.S. Cl. 5—3 4 Claims



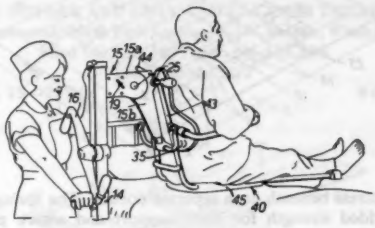
This invention is the combination of a table and a bed, with removable table tops which are stored in a recess in the base structure, said table tops completely enclosing the bed area.

3,732,584

APPARATUS FOR HANDLING DISABLED PERSONS

David Richard James, Hasfield, Gloucester, England, assignor to Mecanaids Limited, Gloucester, England

Filed June 21, 1971, Ser. No. 155,037
Int. Cl. A61g *1/02, 7/10*
U.S. Cl. 5—81 14 Claims



The invention relates to apparatus for handling hospital patients or other persons who are disabled or infirm.

The apparatus comprises a lifting arm having a free end portion movable with respect to the remainder of the arm to either of two operative positions. In one operative position the arm is adapted for the attachment of patient support means employing a sling arrangement, and in the other operative position the arm is adapted for the attachment of a rigid patient support member.

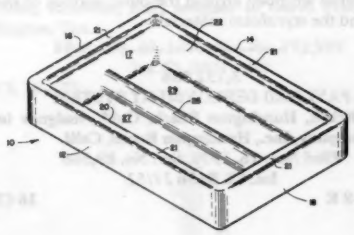
When a rigid support member is used it is desirably in the form of a legless chair. The apparatus is preferably of mobile form, comprising a wheeled chassis with an upstanding column from which the arm projects.

3,732,585

FLUID-FILLED BED

Vivian D. Krehbiel, P. O. Box 2099, Wichita, Kans.

Filed June 21, 1971, Ser. No. 154,963
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB 10 Claims



A bed with a supporting frame having two adjacent compartments for supporting and containing to separate fluid-filled bags positioned in side-by-side abutting relation. The bags are partially separated by a rib extending upward from the bottom of the supporting frame.

3,732,586

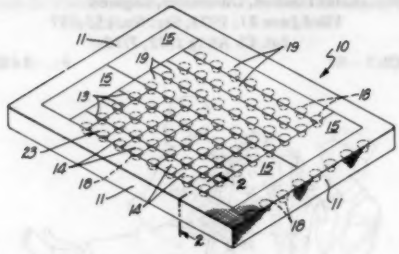
MATTRESS CONSTRUCTION

Louis Elliott Frey, 1271 East Sixth Street, Los Angeles, Calif.

Filed Aug. 6, 1971, Ser. No. 169,652
Int. Cl. A47c *23/00*
U.S. Cl. 5—345 9 Claims

A mattress formed of soft, low density resilient foam material which conforms to the body weight and contour. The upper portion of the mattress is divided into a plurality of separate

portions which are individually compressible in respect to body weight. A plurality of partially compressed coil springs are mounted within cylindrical slits formed in the lower part of



the mattress beneath each separate portion. The springs provide added strength for body support and assure prompt return of the upper part of the resilient material to its normal shape when weight is removed from it.

3,732,587

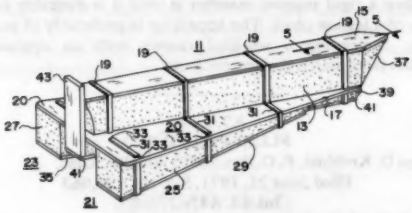
LIGHTWEIGHT VEHICLE

Harold A. Fletcher, Route 2, Box 142, Tulelake, Calif.

Filed Aug. 13, 1971, Ser. No. 171,648

Int. Cl. B63b *5/24*

U.S. Cl. 9—6 **2 Claims**



A lightweight vehicle constructed from a portion of styrofoam material sandwiched between a pair of stiff outer members held together by a plurality of straps made from nonrusting material wrapped around the outer surface of the stiff members and the styrofoam material.

3,732,588

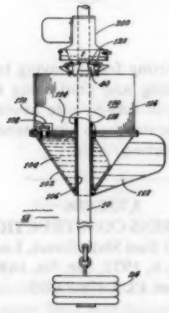
PAYLOAD DEPLOYMENT SYSTEM

John E. Mitchell, Huntington Beach, Calif., assignor to The Biome Company, Inc., Huntington Beach, Calif.

Filed Nov. 16, 1970, Ser. No. 89,586

Int. Cl. B63b *21/52*

U.S. Cl. 9—8 R **16 Claims**



A payload deployment system includes an elongated shaft member having a positive buoyancy relative to the environment in which the payload is to be deployed. This elongated shaft member includes at least one recessed portion forming a latching station. A payload having a positive buoyancy relative to the environment has a portion surrounding the elongated shaft member to allow the payload to be guided for deployment by the elongated shaft member. At the top of the payload there is a series of dogs or latches for latching with the recessed portion of the elongated shaft member. A deployment and retrieval device having a negative buoyancy great enough to overcome the positive buoyancy of the payload is placed over the shaft to force the payload to various positions along the shaft and to operate the latches on the payload.

3,732,589

TREATMENT APPLIANCE FOR TEETH AND THE LIKE

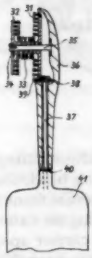
Alfred J. Burki, Forchstrasse 428, Zollikon, Switzerland

Filed Nov. 19, 1970, Ser. No. 91,102

Claims priority, application Switzerland, Nov. 20, 1969, 17284/69

Int. Cl. A46b *13/02*

U.S. Cl. 15—22 R **4 Claims**



The present invention has reference to a treatment appliance and like tool, especially for treating teeth of human beings and generally for simultaneously applying said tool to a variety of treatment surfaces. The appliance is equipped to this end with various brush or polishing bristles which are prearranged in a specific pattern to and for cooperation with each other. An array of disk- or plate-shaped carrier or carriers together with one or more roller-shaped carriers, both retaining bristles thereon, is provided which facilitates access to various faces of a tooth or like object in one operational step, said brushes being continuously driven to efficiently clean and brush without any dexterity and skill on the part of the operator.

3,732,590

SWEEPER

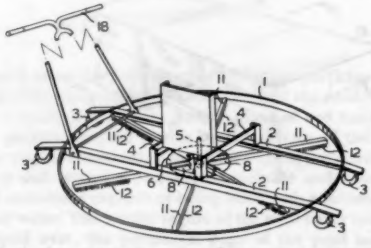
Elais Horst, P. O. Box 18, Wallenstein, Ontario, Canada

Filed June 2, 1971, Ser. No. 149,307

Claims priority, application Canada, June 3, 1970, 084535

Int. Cl. A47l *11/164*

U.S. Cl. 15—49 R **2 Claims**



This invention relates to a rotary brush sweeper which is particularly suitable for cleaning the aisles of poultry sheds,

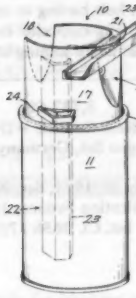
the sweeper including a rotatable disc carrying a number of radially extending wire brushes, the disc being provided with means inhibiting movement of the arms in horizontal plane but permitting limited movement thereof in a vertical plane so as to cater for differences in height of obstructions encountered by the bristles during operation.

3,732,591

CAP HAVING A REMOVABLE WIPING BLADE

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Oct. 20, 1971, Ser. No. 190,776
Int. Cl. A46b *11/02*; A47l *1/08*
U.S. Cl. 15—245 **2 Claims**



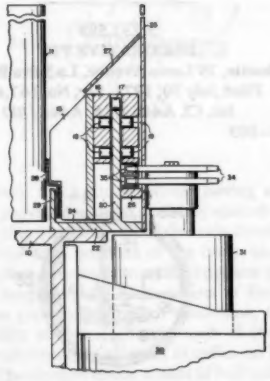
A cap for a fluid dispensing container having a body and flange members on the body for holding the cap adjacent a dispensing area of the container is disclosed. An elongate slot in the body removably retains a resilient blade member for wiping a liquid dispensed from the container of off the surface onto which it is dispensed. A cleat on the body carries the blade member in a storage position when the blade is not in use.

3,732,592

CHIP REMOVER

Worthy J. Forward, Jr., Rochester, N.Y., assignor to USM Corporation, Rochester, N.Y.

Filed Aug. 2, 1971, Ser. No. 167,899
Int. Cl. B23b *41/00*
U.S. Cl. 15—246.5 **3 Claims**



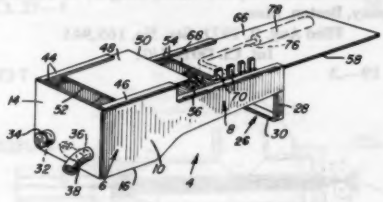
The table of a vertical boring mill has a trough surrounding it; and a plurality of paddles are mounted on paddle carriers to be driven around said trough to sweep chips before them. The paddle carriers are secured to an endless circularly arranged chain driven by a sprocket; and the bottom of the trough has a slot or slots therein through which the paddles sweep the chips out of the trough.

3,732,593

PAINT ROLLER AND TRAY AND CLEANER THEREFOR

Arne Habostad, 6000 24th Avenue, N.W., Seattle, Wash.

Filed May 12, 1971, Ser. No. 142,593
Int. Cl. B44d *3/12*
U.S. Cl. 15—257.06 **9 Claims**



A roller brush-type painter's tray which is structurally similar to commonly used trays while the user is painting and which is unique in that the respective end portions have spaced parallel coplanar properly paired tracks. These tracks are provided with first and second lids, one of which is associated with the relatively deep sump and the other one with the elongated relatively shallow roller brush trough-like guide. These lids are in different planes when in use, and when closed they permit the nozzle of a garden hose to be passed through spaced ends of the lids in a manner to spin the confined roller brush. The force-fed stream of water acting on the turning brush will clean the brush and also the interior surfaces of the rim-like wall of the overall tray.

3,732,594

CLOSER HARDWARE FOR SLIDING SASH AND THE LIKE

Roy Mills, Rossville, Ind., assignor to Dorex Products, Inc., Arlington, Tex.

Filed Aug. 19, 1971, Ser. No. 172,999
Int. Cl. E05f *1/08*
U.S. Cl. 16—72 **11 Claims**

Horizontal movement of a part is achieved by a spring-actuated slide vertically movable in a guide connected with one such part, a link being pivotally attached at one end to said

slide and having its other end pivotally attached to another part. The link is nearly, but not quite, on dead center in each of nearly horizontal and nearly vertical positions in which the said parts are relatively open and closed, the final movement of the actuated part toward either extreme position being gentle and substantially free of impact. It is broadly immaterial whether the part to which one end of the link is pivoted is a sash or a frame, or whether bias is provided by a compression spring, a tension spring, or an elastomeric spring.

3,732,595

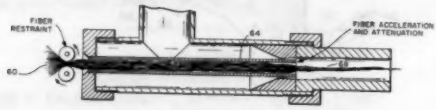
FIBER SHATTERING PROCESS

Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Aug. 9, 1971, Ser. No. 169,941

Int. Cl. D01g *1/02*

U.S. Cl. 19—.3 **7 Claims**



A high-velocity jet stream of textile-length fibers is caused to impinge onto a rigid airfoil at a velocity above the critical velocity at which the viscoelastic flow property of the fibers can exert itself, with a consequent shattering of a substantial portion of the fibers into fibers of shorter length. The shorter length fibers may be decelerated and diffused into a plenum chamber, from which they may be removed in the form of a fibrous web.

3,732,596

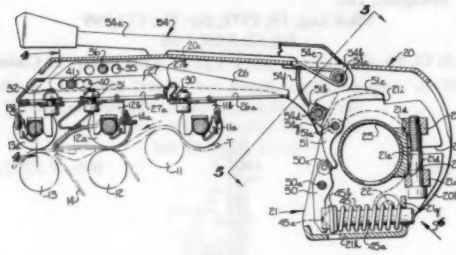
TOP ROLL LOADING SYSTEM FOR DRAFTING UNITS

Stefan Staneff, Herzongenaurach, Germany, assignor to Industriewerk Schaeffler, OHG, Herzongenaurach, Germany

Filed June 16, 1971, Ser. No. 153,608

Int. Cl. D01h *5/46*

U.S. Cl. 19—267 **15 Claims**



A guide arm of a top roll loading system of a drafting unit is pivotally mounted on a bracket, with the pivot thereof positioned a substantial distance below and rearwardly of the plane of all of the drafting rolls so that yieldable force applied to the guide arm is transmitted to the top rolls in an inclined downward and forward direction, as is particularly desirable where the back or feed top roll is offset rearwardly of the back or feed bottom roll of the drafting unit. Also, a novel compound linkage connects a yieldable force means to a latch arm pivoted on the guide arm and is so designed that a compression spring or a pressurized pneumatic bag or tube may be used alternatively as the yieldable force means therefor by a simple interchange of parts.

3,732,597

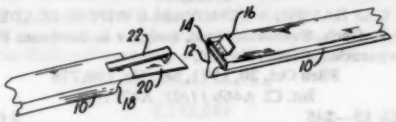
EASILY INSTALLED FAN BELT

Martin Epstein, Rockville Center, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed June 29, 1971, Ser. No. 157,884

Int. Cl. F16g *7/04*

U.S. Cl. 24—31 B **1 Claim**



An automotive fan belt having in cross section the general shape of a T and having opposite ends provided with snap fasteners or screw clamps for joining said ends.

3,732,598

FREE CABLE WINCH

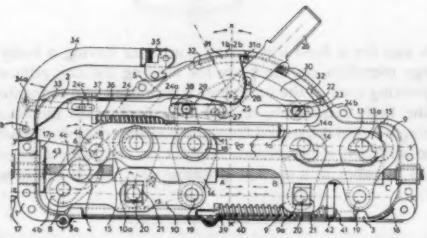
Charles Hatay, Bufingen Bei, Germany, assignor to Decauville, Corbeil, France

Filed July 29, 1971, Ser. No. 167,392

Claims priority, application France, July 29, 1970, 7027876

Int. Cl. B65h *17/36*

U.S. Cl. 24—68 D **19 Claims**



The invention relates to a free cable winch. Each pair of jaws 11, 14 is guided by two pairs of rollers 18 which run in guideways 1*a*, 2*a* formed in the cheeks of the winch case to ensure rectilinear traction of the cable C, with substantially no flexing of the cable between the two pairs of jaws. The invention can be applied to powerful winches with consequent low wear of the cable.

3,732,599

DECORATIVE PIN

Ray J. Morissette, 29 Loma Avenue, La Selva Beach, Calif.

Filed July 30, 1971, Ser. No. 167,628

Int. Cl. A44b *1/18*; A44c *1/00*

U.S. Cl. 24—103 **3 Claims**

Decorative fastening devices for holding sheets, blankets and the like from separating and at the same time to present a

decorative appearance. These pins include two principal parts, one of which is on the bottom of the sheet and the other of which is on the top. The top part is provided with a decorative body and a releasable clutch or grip for receiving the pin which is attached to the bottom part. The bottom part is provided with a recessed member for pivotally supporting the pin. The pin is spring biased so that when it is released from the clutch of the top member it is rotated on its pivot and the sharp point thereof is moved into said recess. The pin is also provided with an actuating member which is exposed on the outside of the bottom part and presents a grip whereby the pin may be rotated manually into its working position.

3,732,600

ATTACHMENT ASSEMBLY

Joseph Perina, Huntington, N.Y., assignor to American Velcro, Inc., Manchester, N.H.

Continuation-in-part of Ser. No. 108,128, Jan. 20, 1971, abandoned. This application Apr. 15, 1971, Ser. No. 134,189

Int. Cl. A44b *17/00*

U.S. Cl. 24—204 **12 Claims**

An attachment assembly for hooking elements of a separable fastener member is disclosed which comprises a first member having a plurality of said hooking elements projecting from one surface thereof and second member attached to the first member by means of at least two selectively orientated tangs projecting from the opposite surface of the first member and extending through corresponding receiving holes in the second member.

3,732,601

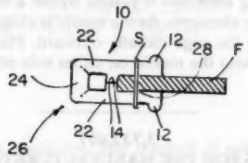
STRINGER FOR A SLIDE FASTENER

Fred H. Rojahn, 107 Jefferson Terrace, Springfield, N.J.

Filed Oct. 8, 1970, Ser. No. 79,123

Int. Cl. A44b *19/10, 19/14*

U.S. Cl. 24—205.13 D **11 Claims**



A stringer blank for a slide fastener having an extruded elongated body provided with transversely spaced slider guide members projecting outwardly from one side thereof adjacent to the longitudinal edge portions of the body, and abutment members projecting outwardly from the opposite side thereof. A plurality of longitudinally spaced slots is formed in the stringer blank to provide a series of transverse, substantially parallel ladder-like portions, wherein each of these portions includes a centrally enlarged element to define an interlocking head member. The stringer blank is bent in half with one guide member overlying the other guide member, and with the abutment members contacting each other to define a stringer provided with a series of projection elements having the interlocking head member at the free end thereof and an open receiving slot at the opposite end thereof. The receiving slot is adapted to house the tape or fabric to which the stringer is attached by conventional stitching. The abutment members position the fabric relative to the interlocking head member to provide a uniform spacing therebetween. The receiving slot may be provided with an enlarged recess to receive an elongated bead formed on the edge of the fabric.

3,732,602

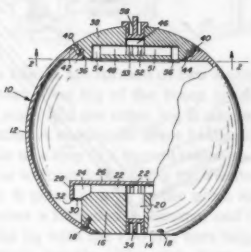
SUBMERSIBLE CREMATORY URN

Alexander Vigh, 555 Fairlawn Parkway, Saddle Brook, N.J.

Filed May 28, 1971, Ser. No. 147,800

Int. Cl. A61g *17/08*

U.S. Cl. 27—1 **20 Claims**



A submersible urn, preferably spherical in shape for containing cremated remains for burial at sea is disclosed. The urn is constructed with an air vent at the top, ballast at the bottom, and a water inlet port whereby water may enter the urn so that it will sink. The urn is constructed of a degradable material whereby chemical action of the water in which it is submerged will dissolve it over a period of time.

3,732,603

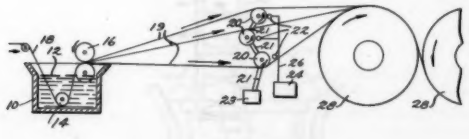
METHOD AND APPARATUS FOR LAYING DOWN THE FIBER HAIRINESS OF TEXTILE YARNS

Walter F. Iliman, Greensboro, and Clarence R. Hyder, Burlington, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Nov. 12, 1971, Ser. No. 198,277

Int. Cl. D06c *29/00*

U.S. Cl. 28—28 **17 Claims**



The surface hairiness, or fuzziness of staple spun yarn is reduced during a sizing operation by passing individual strands of the wet sized yarn through and in contact with the surfaces of the specially designed circumferential grooves in the surface of a cylindrical roller rotating in a direction opposite to the direction of the yarn's travel so that the higher linear speed of the roller exerts a strong opposing wiping, squeezing force on the yarn moving counter to the surface speed of the inner walls of the grooves of the roller.

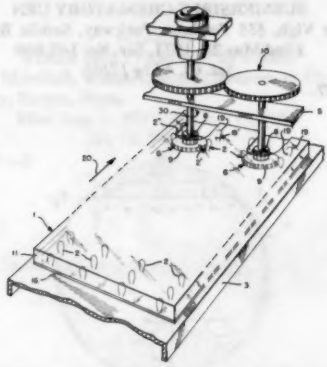
Under certain circumstances, where modified performance is desired, the grooved roller may be rotated in the same direction as the yarn travels.

3,732,604

METHOD OF SEVERING PILE LOOPS IN THE PREPARATION OF SEPARABLE FASTENERS

George H. Erb, Rutland, Vt., assignor to American Velcro, Inc., New York, N.Y.

Division of Ser. No. 835,204, June 20, 1969, abandoned. This application Jan. 6, 1971, Ser. No. 104,448
Int. Cl. D06c *13/00*
U.S. Cl. 28—76 P 8 Claims



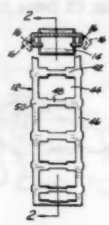
A method for uniformly cutting loop-shaped elements upstanding from a foundation sheet by encasing a plurality of filamentary loops in a medium capable of retaining them in a relatively immovable state prior to subjecting portions thereof to a cutting action. In a particular embodiment the loops are cut or milled to form the hook member of a hook and loop type fastener.

3,732,605

METHOD OF MAKING ROLLER BEARING CAGE-AND-ROLLER UNIT

Hudson B. Scheifele, 30651 Ponds View Drive, Franklin, Mich.

Filed Nov. 3, 1971, Ser. No. 195,188
Int. Cl. B21d *53/12*
U.S. Cl. 29—148.4 C 3 Claims



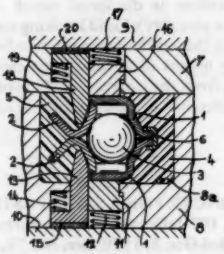
An annular sheet-metal roller-riding cage has a tubular portion with a multiplicity of circumferentially-spaced openings providing pockets for the rollers. Each opening or pocket has opposite cage-support surfaces disposed tangential to the roller mounted therein. The rollers are held in assembly by a corresponding number of L-shaped tabs, two for each roller, with arms extending radially from the tabular portion of the cage and located at the opposite ends of the roller. The free ends of the L-shaped tabs form tongues extending axially toward one another from the opposite sides of the tubular portion and are disposed at the opposite side of the pitch circle of the set of rollers from the tubular portion of the cage, thereby effecting retention of the rollers in the cage. The opposite sides of the tongues have surfaces converging toward the tubular portion. The tubular portion of the cage is positioned inward of the pitch circle of rollers seated in a two-flanged inner race, or outward of the pitch circle of rollers seated in a two-flanged outer race. Before assembly, the L-shaped tabs are disposed at obtuse angles to the tubular portion of the cage. Upon inserting the rollers in the pockets and seating them in a roller bearing race having fixed flanges on both ends, the opposite sets of roller-retaining tabs are bent axially toward one another to place their free ends or tongues between the rollers for retention and spacing thereof. This assembly is then mounted in a race with a fixed flange on one end and with a flangeless opposite end. The invention thus provides a roller-riding cage with a minimum clearance between it and the lowermost rollers yet accurately located in a radial direction. This is done by causing the normal flat surfaces of the cage support portion on the roller pockets to come into contact with the body of the rollers adjacent the periphery of the tubular portion of the cage which is closest to the pitch circle of the set of rollers so as to minimize the clearance between the cage support surface and the rollers for a given radial movement of the cage.

3,732,606

METHOD OF MAKING BEARINGS

Hubert de Germond, "Les Presles", Methon-Saint-Bernard, France

Filed July 2, 1971, Ser. No. 159,412
Int. Cl. B23p *11/00*
U.S. Cl. 29—148.4 A 2 Claims



A method for the manufacture of bearings, of the type in which rolling members are retained between two pairs of races. A cage constituted by two pairs of races and intermediate rolling members is placed within a mould which has two wedge like elements. As the mould is closed these two elements expand the cage radially outward. Plastics material is then injected into the mould on either side of the cage to encase same.

3,732,607

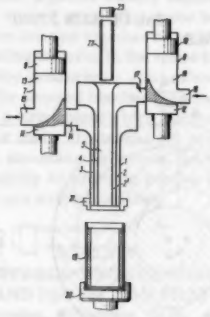
APPARATUS FOR THE MANUFACTURE OF GALVANIC CELLS

Faat Khatovich Nabiullin, 3, Mytischinskaya ulitsa 14-a, kv. 90; Zoya Mikhailovna Buzova, 3 Mytischinskaya ulitsa, 14-a, kv. 98; Efim Mikhailovich Gertsik, Razumovsaka naberezhanaya, 14, kv. 34; Boris Vasilievich Marfin, Suschevsky val., 23, kv. 116, all of Moscow; Vyacheslav Anatolievich Rabinovich, Balashikha I, ulitsa Sovetskaya, 16, kv. 6, Moskovskaya obl., and Ivan Ivanovich Koval, N-Peschanaya ulitsa, 23/7 kv. 369, Moscow, all of U.S.S.R.

Continuation of Ser. No. 870,939, July 17, 1969, abandoned, which is a division of Ser. No. 642,415, May 31, 1967, Pat. No. 3,506,750. This application Jan. 26, 1972, Ser. No. 220,904
Int. Cl. H01m *35/30*
U.S. Cl. 29—204 D 7 Claims

Apparatus for the manufacture of galvanic cells comprising a support pusher for a casing and a positive electrode of a gal-

vanic cell to be manufactured, and a nozzle engageable with the casing and positive electrode. The nozzle has at least two coaxially disposed tubular cavities for pressing electrolyte and negative electrode material respectively into the positive elec-



trode while a current conductor is introduced into the casing within the negative electrode material to form a galvanic cell with the casing and positive electrode. A displaceable guide ring is externally mounted on the nozzle for seating on the casing and positive electrode.

3,732,608

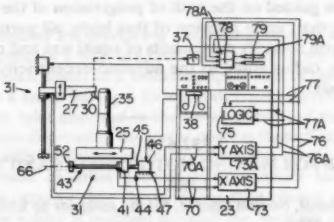
METHOD OF MAKING A PRECISION POSITIONING APPARATUS

George S. Knopf, Dayton, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 824,243, May 13, 1969, Pat. No. 3,641,535. This application Feb. 22, 1971, Ser. No. 117,823

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 **7 Claims**



A positioning apparatus, and method of making same are disclosed, the apparatus including two relatively movable threaded nut and screw members with one of the members having detectable means thereon at intervals about the thread crests and the other having reading head means capable of detecting the detectable means wherein such apparatus is capable of precisely relatively moving its members by relative rotation therebetween and indicating both the magnitude and direction of movement of one member with respect to the other by detection of the detectable means.

In the method of making the apparatus, the reading head means is also capable of being energized to place the detectable means about the thread crest and the method includes the steps of relatively rotating the nut and screw member, measuring intervals of relative axial movement as a result thereof, and energizing the reading head means at such intervals, so that detectable means are placed at positions precisely corresponding to said axial intervals.

3,732,609

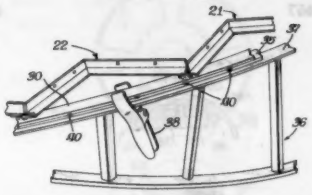
METHOD OF MAKING CURVED STAIRCASE

Adam Cirgenski, Jr., Lambertville, Mich., and Vernon C. Stilles, Toledo, Ohio, assignors to Stile-King Stairs, Inc. and Scholz Homes, Inc., Toledo, Ohio

Division of Ser. No. 734,413, June 4, 1968, Pat. No. 3,616,585. This application Mar. 2, 1970, Ser. No. 20,261

Int. Cl. B23p *19/00*

U.S. Cl. 29—428 **6 Claims**



Right-angle braces are formed of two sections of angle iron mitered together. One leg of the brace is adapted to receive the riser of a stair; and the other leg is adapted to receive the tread of the stair. A number of these braces, each designed to define one side of a step in a curved staircase, are mounted on a flat metal bar to form a flat string for the staircase. A similar flat metal bar is place in a jig at the pitch and curvature the finished staircase is intended to assume; and the formed string is placed in the jig with the two flat bars engaging each other throughout their lengths. The two bars are then welded together to form a lamination while in the jig to provide the curved horse for one side of the staircase with the laminated bars retaining the desired curve and pitch after removal from the jig. Another metal horse is similarly formed for the other side of the staircase, but in a separate jig of different curvature. After the two curved horses are installed, the treads and risers are attached to a pair of associated braces by screws inserted from beneath the metal frames.

3,732,610

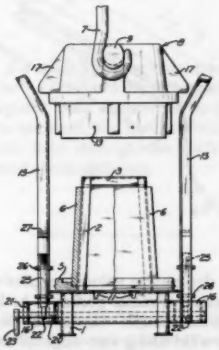
METHOD FOR LINING A HOT TOP CASING WITH INSULATING PANELS AND RING

Joseph Perri, Coraopolis, Pa., assignor to The Union Commerce Bank, Cleveland, Ohio

Division of Ser. No. 842,076, July 2, 1969, Pat. No. 3,675,304, which is a continuation-in-part of Ser. No. 726,115, May 20, 1968, abandoned. This application Aug. 25, 1971, Ser. No. 174,797

Int. Cl. B21d *39/02*

U.S. Cl. 29—463 **4 Claims**



A method is disclosed for lining a hot top casing with insulating panels supported on edge in an upwardly tapered configuration corresponding to the size and shape of the opening in the casing. The casing is lowered around the panels to provide a press fit.

3,732,611

BLADE-ADJUSTING METHOD FOR ROTARY CUTTERS

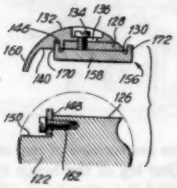
Takashi Watanabe, Nagoya, Japan, assignor to Kabushiki Kaisha Towa Denki, Nagoya-shi, Aichi-ken, Japan

Division of Ser. No. 809,281, March 21, 1969, Pat. No. 3,600,816. This application Jan. 13, 1971, Ser. No. 106,196

Claims priority, application Japan, Apr. 5, 1968, 43/22042; Apr. 5, 1968 43/26699; Apr. 5, 1968, 43/26698; July 30, 1968, 43/53369

Int. Cl. B23q *3/00*

U.S. Cl. 29—467 6 Claims



A method for adjusting a blade of a rotary cutter. The blade is removable from the body of the cutter when an edge of the blade is sharpened. A positioning member is adjustably connected with the blade member, and a gauge is provided for adjusting the positions of the blade member and positioning member one with respect to the other while they are still separate from the cutter body so that the relative positions of the blade and positioning members will situate the cutting edge of the blade at the proper location with respect to the positioning member. The cutter body has a locating part which locates the positioning member at a predetermined location on the cutter body, so that in this way when the parts are reassembled with the positioning member situated at this predetermined location, the blade will automatically assume its proper cutting position at the cutter body.

3,732,612

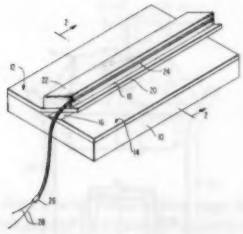
METHOD FOR EXPLOSIVE BONDING OF METALS

Wayne E. Simon, Evergreen, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed June 2, 1971, Ser. No. 149,287

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 8 Claims



A strip of low detonation velocity explosive overlies spaced overlapping portions of metal bodies to be bonded and a narrow cord of high detonation velocity explosive extends in the direction of the weld along one edge of the low detonation velocity strip such that initial ignition of the high detonation velocity explosive cord creates a detonation front which moves across the weld at an angle whose tangent is the ratio of the detonation velocities of the two explosives to prevent deformation of weld geometry ahead of detonation.

3,732,613

METHOD AND DEVICE FOR FRICTION WELDING

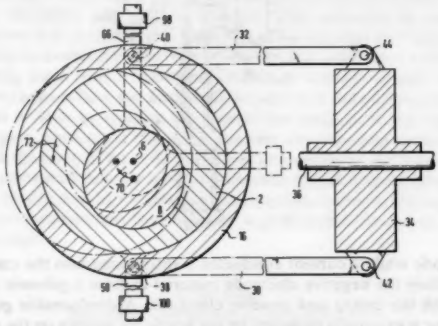
Karl-Heinz Steigerwald, Prinzeneiche 15, Starnberg, Germany

Filed Dec. 17, 1970, Ser. No. 98,528

Claims priority, application Germany, Dec. 18, 1969, P 19 63 546.2

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 24 Claims



The method of friction welding is applicable to surfaces to be welded with any type of marginal boundary. Two workpieces to be welded together are arranged against each other at the surfaces to be welded and are heated to welding temperature by a relative oscillatory movement along such surfaces. The relative oscillatory movement is effected by way of relative rotatory movement with the workpieces remaining substantially parallel to each other.

A device for carrying out the method comprises a workpiece holder driven by an eccentric body rotatable about an axis. A circular rotatory path is defined on the body and the eccentricity of this path is adjustable relatively to said axis, the holder being movable at least two-dimensionally in a plane corresponding to the orientation of the surface to be welded. The holder is guided on the path of progression of the eccentric body so that, upon rotation of that body, all parts of the holder perform rotatory movements of equal size and circular shape with a radius equal to the adjusted eccentricity of the eccentric body.

3,732,614

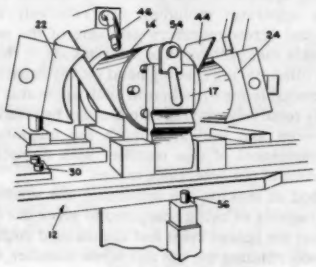
METHOD FOR MAKING MOTOR SHELLS AND THE LIKE

Henry E. Boutell, Norton Shores, Mich., assignor to EMF, Inc., Muskegon, Mich.

Filed Sept. 10, 1970, Ser. No. 71,185

Int. Cl. B23k *31/02*

U.S. Cl. 29—477 12 Claims



Tubular shells are made from pre-cut blanks of basically flat sheet stock by placing the blanks in an indexed position,

clamping the blanks tangentially against a forming arbor, and then forcing shaped jaws having an end configuration complementary to the outer periphery of the arbor against the unclamped portions of the blank to progressively bend the blank and wrap the same about the arbor, in a manner which brings the ends of the blank together closely adjacent one another but at least slightly spaced apart. The space between the ends of the blank are then secured together by welding, in a manner which deposits welding material in the space between the ends of the blank, thereby producing a circumferentially continuous tubular wall. The secured blank is then forced endwise off the arbor and over a sizing plate which accurately sizes the interior of the tubular shell. The blanks are pre-cut by use of a shearing die which simultaneously coins the sheared end and bends the same slightly to promote precise circularity when the end extremities are welded together.

3,732,615

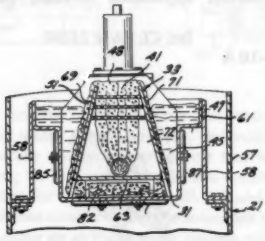
METHOD FOR PRODUCING STANDING WAVE OF SOLDER AND PROTECTIVE FILM MEANS

Robert D. Fitzsimmons, Windham, N.H., assignor to Gale Systems, Inc., Andover, Mass.

Division of Ser. No. 782,824, Dec. 11, 1968, Pat. No. 3,589,590. This application May 14, 1971, Ser. No. 143,461

Int. Cl. B23k *31/02, 35/12*

U.S. Cl. 29—503 **5 Claims**



A method for producing a standing wave of solder and oil compound of a selected ratio and including the steps of placing molten solder in a soldering apparatus of the type that includes a sump having a fountain disposed therein and formed with an inlet disposed in the lower portion of such sump and an outlet disposed in the lower portion thereof and filling such sump with sufficient solder to cover the inlet. A layer of oil compound or other protective film means having a lesser specific gravity than the solder is then placed on the solder and the solder is pumped through the fountain at a rate sufficient to cause the solder emitted from the outlet to form a standing wave and then spill downwardly around the fountain and through the layer of oil compound at a rate sufficient to pull a sufficient amount of oil compound downwardly therewith and into the inlet to cause the mixture passing through the fountain to maintain the selected ratio of solder to oil compound.

3,732,616

METHOD OF MAKING END FRAME STRUCTURES FOR ELECTRIC MOTORS

Alfred Masrrodonato; Kurt Porter, both of Owosso, and Robert R. Rhoads, Corunna, all of Mich., assignors to Universal Electric Company, Owasso, Mich.

Division of Ser. No. 740,338, June 26, 1968, Pat. No. 3,567,973. This application Feb. 25, 1971, Ser. No. 118,596

Int. Cl. H02k *15/00, 15/14, 15/16*

U.S. Cl. 29—596 **6 Claims**

In one form the electric motor comprises an improved frame which rotatably supports the rotor shaft. This frame consists of a circular shell which encircles the stator and two end members which engage into the inside of the shell and contain a bearing for supporting an end of the shaft. The shell has a plurality of notches at each end for receiving mating projections on the end member, thus securing the end member

against relative rotational movement. The shell also has a plurality of slots in each end which serve to define a portion of the shell which can be deformed radially inward after assembly of the end members to secure the end members against axial movement.

3,732,617

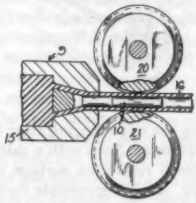
METHOD OF PRODUCING A TUBULAR MAGNET

Robert L. Rowe, Sea Gull Hill Road, North Haven, Sag Harbor, N.Y., and Donald Peccerill, 37 Susquehanna Avenue, West Haven, Conn.

Division of Ser. No. 684,800, Nov. 21, 1967, Pat. No. 3,640,657. This application June 22, 1970, Ser. No. 59,814

Int. Cl. H01f *3/08, 7/06*

U.S. Cl. 29—608 **3 Claims**



An apparatus for aligning magnetic particles in a base material formed into a substantially cylindrical member, comprising a soft magnetic core adapted to be positioned within the confines of the member, and means positioned to apply an orienting magnetic field through the walls of the member while it is positioned about said core.

3,732,618

ADJUSTABLE PIPE GROOVER AND CUT-OFF

Robert H. Lorenz, 1888 Lakewind Drive, Pontiac, Mich.

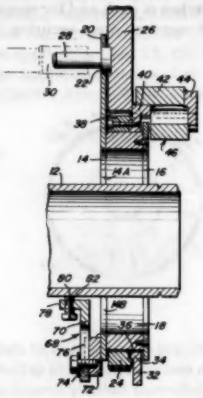
Filed Dec. 18, 1970, Ser. No. 99,478

Int. Cl. B23d *21/04*

U.S. Cl. 30—97 **6 Claims**

A pipe receiving tool which incorporates a driven ring gear carrying an adjustable knife mounting arm for travel about the

pipe in cutting engagement therewith. The knife mounting arm can adjustably mount two knives so as to simultaneously



groove and cut-off a pipe, or can carry a single knife to perform either function by itself.

3,732,619

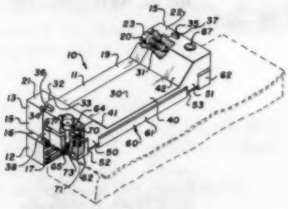
TOOL FOR TRIMMING LAMINATED PLASTIC SHEETS

Detlef Grueber, North Vancouver, British Columbia, Canada, assignor to Arlyn Industries Ltd., British Columbia, Canada

Filed June 1, 1971, Ser. No. 148,537

Int. Cl. B26b *29/00*

U.S. Cl. 30—287 **5 Claims**



A tool for trimming the overhanging edge of a sheet laid on an object, such as a counter, flush with a side edge of the article. The tool includes a reference surface adapted to move along the side surface, and a depressible surface substantially at right angles to the reference surface and adapted to ride on the surface of the sheet to be cut. At least one cutting tool is mounted in the device with its cutting edge positioned to cut into the sheet when the tool is depressed.

3,732,620

METHOD OF TREATING PLASTIC AND ELASTOMERIC MATERIALS AND ARTICLES PRODUCED THEREBY

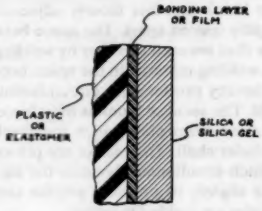
Robert D. Misch, and Donald A. Daus, both of Chicago, Ill., assignors to MBT Corporation, Chicago, Ill.

Division of Ser. No. 8,530, Feb. 4, 1970, Pat. No. 3,637,416, and a continuation-in-part of Ser. No. 636,258, May 5, 1967, which is a continuation-in-part of Ser. Nos. 473,212, July 19, 1965, abandoned, and Ser. No. 524,454, Feb. 2, 1966, abandoned, which is a continuation-in-part of Ser. No. 231,299, Oct. 17, 1962, abandoned. This application June 9, 1971, Ser. No. 151,242

Int. Cl. A61c *13/00*

U.S. Cl. 32—2 **3 Claims**

A method of improving the surface characteristics of plastics and elastomers which in its preferred aspects includes the steps of forming a bonding or coupling film on the surface of a plastic or elastomeric material and thereafter contacting the film with a compound or a mixture of compounds, or a



solution thereof, capable of forming a deposit or coating of silica or silica gel thereon, and articles produced in accordance with the method.

3,732,621

PERMANENTLY IMPLANTABLE FIXTURE MEANS FOR PROTHESIS AND THE LIKE

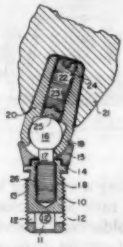
Bertil I. Bostrom, Taby, Sweden, assignor to AGA Aktiebolag, Ligingo near Stockholm, Sweden

Filed Mar. 12, 1971, Ser. No. 123,707

Claims priority, application Sweden, Mar. 25, 1970, 4210/70

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **20 Claims**



As a permanently implantable fixture means for prosthesis and the like in a human body, especially for implanting a dental prosthetic structure, a means composed by at least two parts has been proposed for attaching the prosthetic structure to bone tissue. A first part of the attachment unit is intended to be applied in such a way in the bone tissue that it will remain embedded in said tissue during all of the time required for healing the damage which occurs when the first part is attached to the bone and while the bone tissue grows into the attachment, and a second part of the attachment unit, serving as mounting unit for the prosthetic structure and so shaped that it may be attached to the first part of the attachment unit and pass through such weak tissue covering the bone tissue. The mounting unit is intended to combine the attachment unit inserted into the bone tissue with a prosthetic structure located outside of the weak tissue.

Such permanently implantable attachment means have been used for permanently attaching dental prosthetic structure to the jawbone in human bodies. The jawbones rather often have a narrow cross-section, and the longitudinal direction of the cross-section may be diverge sharply at different parts of the same jaw and/or the same jawbone but especially between the upper jaw and the lower jaw. This, among other reasons, results in so-called over-bite or under-bite, respectively. As the attachment units must, for technical reasons, be well centered in the jawbone, the longitudinal directions of the attachment units will not always be in align-

ment mutually in the same jaw, nor between the upper jaw and the lower jaw. This is a serious disadvantage, because the longitudinal direction of the teeth in the prosthetic structure should be in alignment with the longitudinal direction of the attachment unit. A compromise between these demands either a weak or completely unsatisfactory attachment in the jawbone or non-aligned prosthetic structure. Therefore, there is a need for an attachment means of the kind indicated above, in which the said first part attached to the jawbone may form an angle with the said second part to which the prosthetic structure is attached.

3,732,622

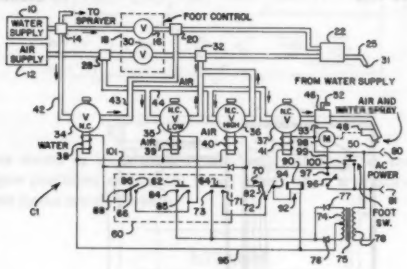
CONTROL SYSTEM FOR DENTAL DRILL OPERATION

Chester B. Rackson, 22 Orchard Drive, Woodbury, N.Y.

Filed Feb. 12, 1971, Ser. No. 115,001

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **10 Claims**



A dental drill control system has air and water lines connected to air and water supply sources. Solenoid controlled adjustable valves are connected to the air and water supply sources for passing air and water at selected volume rates to a turbine control box for a high speed drill. A hand held switch assembly has switches connected to the solenoids of the valves for selectively passing air at high or low volume rate to the turbine control box accompanied by water flow or without water flow. An existing foot control may by-pass these valves for foot control of air and water supply to the turbine control box. A switch operated relay may pass power to a motor driving a low speed drill and to another solenoid valve passing air to an air and water sprayer under control of one of the hand held switches. An existing foot switch can by-pass the relay to operate the low speed drill and sprayer independently of the hand held switches.

3,732,623

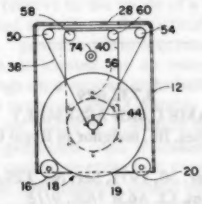
ROTARY MOVEMENT DISTANCE MEASUREMENT DEVICE

John H. Bopst, III, 409 Chalfonte Drive, Catonsville, Md.

Filed Aug. 19, 1971, Ser. No. 173,111

Int. Cl. G01b *3/12*

U.S. Cl. 33—141 R **3 Claims**



A rolling-contact adding and subtracting distance measurer comprising a pair of differently graduated endless tapes driven by unequal size sprocket-pulleys integral with a drive wheel rotatively mounted in a palm-sized case, with a portion of the wheel rim protruding from the bottom of the case; idlers carry the tapes in a flat run past an observation window in the top of the case; anti-tip rollers keep the case aligned with the surface to be measured in a typical embodiment.

3,732,624

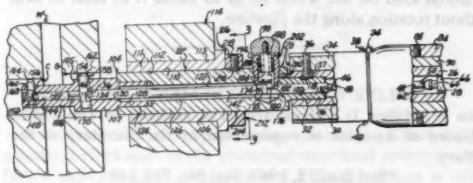
SPINDLE FOR DIAL INDICATOR GAUGE

Andrew Eisele, Desert Hot Springs, Calif., assignor to Dunn Tool Company, Livonia, Mich.

Filed Oct. 20, 1971, Ser. No. 191,041

Int. Cl. G01b *5/00, 5/24*

U.S. Cl. 33—174 Q **12 Claims**



Adapted to be mounted in a reference bore of a master fixture is a hole-location and concentricity-measuring spindle having a hollow supporting shaft with a large-diameter cylindrical rearward pilot portion, an intermediate-diameter middle portion and a small diameter forward portion. The intermediate and small diameter portions are provided respectively with axially-spaced parallel transverse bores containing respectively a first hole-location measuring pin or probe and a second hole-location measuring pin or probe. Each probe is slotted transversely intermediate its opposite ends to provide a sharp contact edge engageable with a flat-topped half-conical cam surface on a motion-transmitting rod which is reciprocable in a longitudinal bore of the hollow spindle. These two half-conical cam surfaces are disposed 90° apart from one another around the rod, which near its rearward end is provided with a pair of flat-bottomed diametral notches also disposed 90° apart from one another in co-planar relationship with the flat tops of the half-conical cam portions. A rotatable probe selector knob on its inner end has a crank pin selectively and successively slidably engageable with the flat bottoms of the two notches with the result of rotating the rod to engage one of the probes with its conical cam while disengaging the other probe from its conical cam. The reduced-diameter inner end of the hollow shaft is adapted to be mounted in the handle socket of a conventional relatively-rotatable dial indicator holder operatively connecting the reciprocable motion-transmitting rod with the reciprocable operating plunger of the dial indicator.

3,732,625

PIPELINE PIG

Burton Vernooy, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

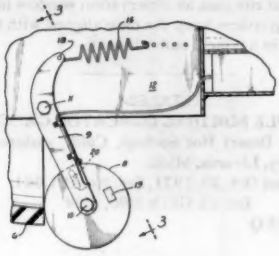
Filed Oct. 12, 1970, Ser. No. 79,808

Int. Cl. G01b *3/12, 7/04*

U.S. Cl. 33—141.5 **3 Claims**

A pipeline pig is provided with a wheel mounted thereon to roll along the inner wall of the pipeline. A magnet is carried by the wheel for movement past a magnetic flux responsive switch carried by the wheel mounting mechanism so that as

the wheel revolves, the magnet moves past the switch to actuate it and thereby provide a signal proportioned to the



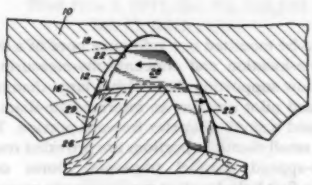
distance moved by the pig without any appreciable drag or torsional load on the wheel so as to cause it to tend to skid without rotation along the pipeline.

3,732,626

SPLINE WEAR MEASUREMENT GAGE

John W. Miller, Jr., Alexandria, Va., assignor to The United Stated of America as represented by the Secretary of the Navy

Filed Jan. 22, 1969, Ser. No. 793,149
Int. Cl. G11b *5/16*
U.S. Cl. 33—179.5 R **6 Claims**



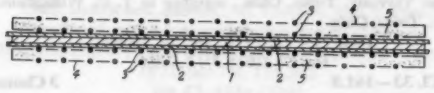
An involute-spline, wear-step measurement gage comprising three coaxial and relatively rotatable splines. Springs are provided to bias a first spline in one rotary direction and the other two splines in the opposite direction when the gage has been placed on or in the spline to be measured and actuated. The first spline engages the unworn (non-drive) surface of the spline being measured and the other two splines are of different radial dimensions so that one of them engages the wear step and the other engages the unworn portion of the original involute, i.e., the form clearance, adjacent the wear step. A dial indicator arrangement registers the difference in positioning of these latter two splines in terms of the magnitude of the wear step.

3,732,627

REMOVAL OF A LIQUID PHASE FROM A MATERIAL

Reinhold Adolf Philipp Wertheim, 1 Hillmont Road, Esher, Surrey, England

Filed Nov. 23, 1970, Ser. No. 91,756
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 **18 Claims**



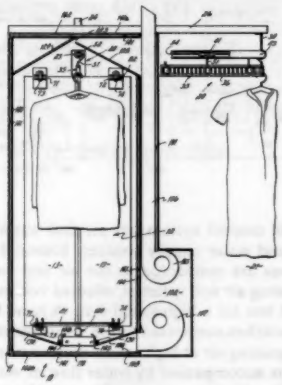
This invention relates to a process and apparatus for removing a liquid phase from a material comprising a liquid phase and a solid phase. This is achieved by bringing a desiccant into close proximity with a liquid-permeable emitter against which is the material to be treated. The desiccant is sufficiently close for the liquid to be drawn off in the form of a vapor, directly onto or into the desiccant.

3,732,628

GARMENT FINISHING TUNNEL

Bertram G. Blevens; Marshall E. Wallace, both of Louisville, Ky., and Walter P. Goodman, New Albany, Ind., assignors to W. M. Cissell Manufacturing Company, Louisville, Ky.

Filed May 26, 1971, Ser. No. 147,014
Int. Cl. F23n *5/24*
U.S. Cl. 34—32 **13 Claims**



A garment finishing apparatus and method wherein suspended garments are conveyed through a thermally insulated chamber and subjected to a moisture treatment to remove wrinkles. The moisturizing treatment cycle is synchronized with the operation of the conveyor and the opening and closing of the chamber doors. A moisturizing atmosphere is created in the chamber by a novel steam-water mixing nozzle which injects moisture into the chamber at a high water-to-steam ratio while the chamber is maintained at a negative pressure. The chamber includes a drip-free inner ceiling and means to re-evaporate the moisture condensate, and exhaust and recirculating fans which operate during timed moisturizing, conditioning, and drying cycles.

3,732,629

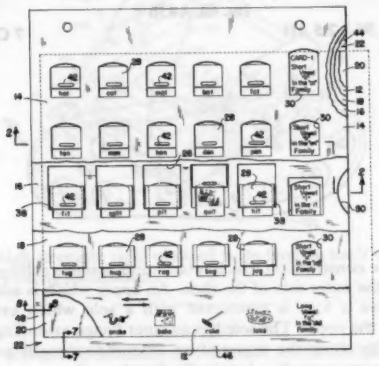
GAME CARD ASSEMBLY

Erich A. Sptizner, Niles, Ill., assignor to Regal Games Mfg. Co., Chicago, Ill.

Filed Mar. 30, 1971, Ser. No. 129,402
Int. Cl. A63f *3/06, 9/18*
U.S. Cl. 35—9 E **1 Claim**

A game card assembly consisting of a plurality of superposed sheets which define shuttered windows wherein the

shutters are individually movable between partially open and fully open positions. In their partially open positions respec-

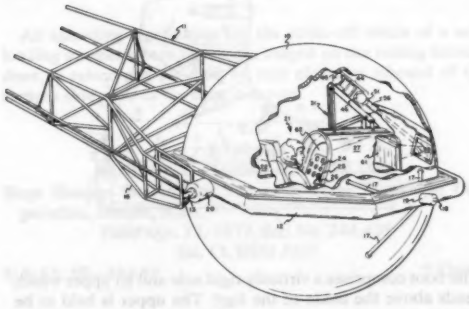


tive items of information are displayed while in their fully open positions additional items which bear a relation to the first items are displayed.

3,732,630
VISUAL SIMULATOR

Richard J. Crosbie, Langhorne, and Louis A. Passavanti, Levittown, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 21, 1970, Ser. No. 82,655
Int. Cl. G09b *9/08*; B64g *7/00*
U.S. Cl. 35—12 N **10 Claims**

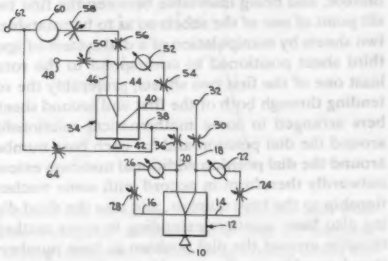


A visual simulation device for producing pictorial motions of the real world relative to the inside of a cockpit in terms of roll, pitch, yaw and altitude. A first attitude-direction indicator or "eight ball," positionable in accordance with computed flight parameters, is located on an instrument panel. The calibrated markings on a second eight ball, driven in parallel with the first, are replaced with a suitably scaled rendition of sky and terrain. An image of a portion of the second eight ball's surface is projected onto a screen by a zoom lens, located behind a central opening in a parabolic reflector and coiled light source. The screen is viewed by the pilot through a Fresnel lens. The zoom lens is controlled by the computed altitude. The visual simulator is fully compatible with a dynamic G environment such as that produced in a flight simulator gimbaled on the end of a centrifuge arm.

3,732,631
FLUIDIC HEART SOUND SYNTHESIZING TECHNIQUES AND APPARATUS

Mathew L. Petrovick, Cedar Hill, N.C., assignor to The United States of America as represented by the Secretary, Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 16, 1971, Ser. No. 181,004
Int. Cl. G09b *23/28*
U.S. Cl. 35—17 **13 Claims**

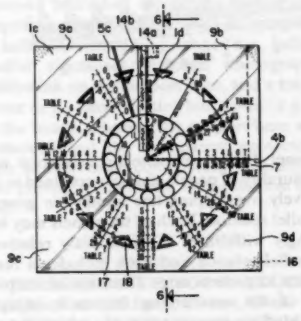


A novel method and apparatus for synthesizing the sound of a heart is disclosed. In the preferred structural embodiment, fluidic principles are employed and a fluidic system is constructed so as to include an oscillator, a controllable amplifier or wave shaping device, and a filling capacitance sound chamber or bladder, all interconnected one to the other by means of flexible and pliable tubing and impedance elements. Audible noise is generated in the system by periodically filling and discharging the sound chamber. Normal and clinical syndrome heart sounds can be synthesized from the audible noise by selectively varying switching of the Coanda air bubble within the fluidic amplifier, the flow rate, volume, and wave shape of the air or other fluid filling into and discharging from the chamber in a predetermined manner by means of adjusting system parameters. The sounds so produced can be monitored and utilized in medical training programs relating to cardiovascular sound diagnosis.

3,732,632
TEACHING AID

Charles A. Dyer, 711 Amsterdam Avenue, Apt. 16-I, New York, N.Y.

Filed June 18, 1971, Ser. No. 154,427
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 A **5 Claims**



A teaching aid mathematical calculator for adding, subtracting, multiplying, dividing, illustrating specific numbers divisible by a divisor, illustrating the remainder after division by any particular divisor, and in more complicated embodi-

ments, being set up for logarithmic or other relationships, the teaching aid typically and in one preferred embodiment including at least three separate sheets, the first two of which include slits from an outer edge to about at least their central portions, the two slit sheets being fitted together so that a wall of one extends through the slit of the other and vice versa, preferably with the slits at right angles to one another, and with a dial slide extending at least through an upper surface of one of the inserted sheets, with the third sheet being preferably in the form of a disk having a slit extending from about its center outwardly radially through the outer edge thereof, and being insertable between the first two sheets at a slit point of one of the sheets so as to be rotatable between the two sheets by manipulation of a dial system of apertures in the third sheet positioned to correspond to the rotary slot in at least one of the first two sheets, preferably the rotary slot extending through both of the first and second sheets, with numbers arranged in some mathematical relationship extending around the dial position and for each base number so located around the dial position additional numbers extending radially outwardly therefrom in accord with some mathematical relationship to the base number, and also the third disk sheet having also base numbers extending in some mathematical relationship around the dial position as base numbers, with additional numbers such as multiples thereof extending radially outward from each base number of the third sheet, such that by dialing specific numbers toward and to a zero point, for example, the numbers may be added, for example.

3,732,633

SLIDING PANEL DISPLAY

Bern Margolis, Kew Gardens, and Irving B. Saunders, West Islip, both of N.Y., assignors to Ply & Gem Industries, Inc., Jamaica, N.Y.

Filed Sept. 14, 1971, Ser. No. 180,385
Int. Cl. G09b *25/00*
U.S. Cl. 35—55 **7 Claims**

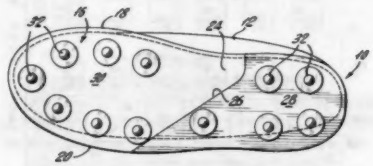
A sliding panel display, or paneling exhibition apparatus, comprising a plurality of panels slidingly confined in a stepped array successively overlapping one another in generally and uniformly parallel relation. Each of the panels may be at least partially slidingly withdrawn independently relative to one another in parallel relation and each includes a reenforcing frame which acts to prevent edge distortion or warping of the panels. Each of the reenforcing frames is independently slidingly supported on respective tracks which act as guides for permitting the independent withdrawal of the framed panels relative to one another. The panels generally extend in vertical relation and in respective parallel directions mutually inclined relative to a vertical plane passing through a common point on each of the panels.

3,732,634

SHOE CONSTRUCTION

Richard M. Jacobson, Sharon, Mass., assignor to Kayser-Roth Corporation, New York, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,963
Int. Cl. A43b
U.S. Cl. 36—2.5 AH **7 Claims**



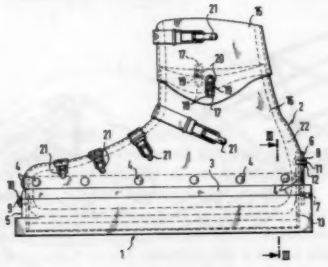
A shoe construction which retards and opposes rolling over toward the outer side of the shoe. An upper which is adapted to receive a foot is connected with a sole which extends beneath the upper. The sole has an inner flange extending longitudinally along the upper at an inner side thereof and an outer flange extending longitudinally along the upper at an outer side. These flanges extend between the toe and heel regions of the upper and they project beyond an exterior surface of the upper. The outer flange extends beyond the exterior surface of the upper to an extent greater than the inner flange so that the outer flange is wider than the inner flange to restrain a backward roll tendency.

3,732,635

SKIING BOOT

Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

Filed May 18, 1971, Ser. No. 144,486
Claims priority, application Germany, May 20, 1970, P 20 24 573.2
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **11 Claims**



The boot comprises a virtually rigid sole and an upper which extends above the ankle of the foot. The upper is held to be angularly adjustable relative to the sole of the boot about an axis which extends in the longitudinal direction of the boot and is adapted to be fixed in any angularly adjusted position, and/or the upper portion of the upper is similarly held relative to the lower part of the upper.

3,732,636

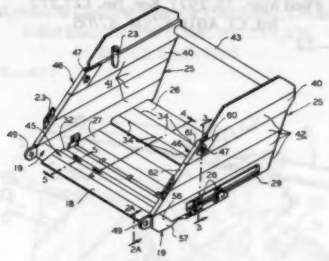
UNITIZED BODY STRUCTURE FOR EARTH MOVING APPARATUS

Howard E. Stuller, and Glenn E. Walser, both of Lubbock, Tex., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 4, 1971, Ser. No. 185,986
Int. Cl. E02f *5/00*; B62d *27/00*
U.S. Cl. 37—124 **13 Claims**

An earth moving apparatus, such as a self-loading scraper, where the scraper body, primarily the side walls, is made of

prefabricated panels constructed of rectangular tubes joined in side-by-side relationship by straight line fillet welds produc-



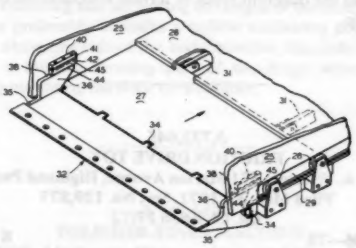
ing a high strength, rigid unitized body lending itself to automatic welding fabrication.

3,732,637

INBOARD STRIKE-OFF BLADE ACTUATING MECHANISM

Franka D. Whitworth, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 4, 1971, Ser. No. 186,135
Int. Cl. E02f *5/00*
U.S. Cl. 37—124 **5 Claims**



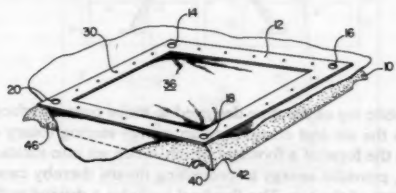
An actuating mechanism for the strike-off blade of a self-loading scraper where the blade, hinged on the rolling bottom door, is raised and lowered by cam elements inboard of the scraper side walls as the door is moved.

3,732,638

SANDWICH EMBROIDERY FRAME

Hope Hanley, Purcellville, Va., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 17, 1972, Ser. No. 244,435
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.91 **7 Claims**



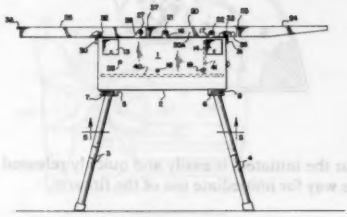
An embroidering frame of the type adapted for supporting a portion of an embroidering canvas, so that the canvas threads are properly aligned longitudinally and laterally. The frame includes an upper template having studs extensible between the intersecting threads of the canvas, the studs then registering with apertures in a lower frame base, so as to align the canvas for embroidery work.

3,732,639

COLLAPSIBLE IRONING BOARD FOR TRAVELERS

Ronald R. Elder, Eugene, Oreg., assignor to Harrison B. Webber, Deadwood, Oreg., a part interest

Filed June 22, 1972, Ser. No. 265,320
Int. Cl. D06f *81/00*
U.S. Cl. 38—139 **8 Claims**



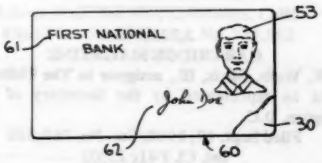
An ironing board for travelers having foldable and positionable sections swingably mounted to a case for concealment therein during transport. A remaining ironing board section is positionable from its operative position into a case closing position. Latch means on the case retain the ironing board sections both in operative positions and in their collapsed configurations. Detachable leg structures and an iron may be stowed within the case for transport. Alternative means are provided for support of the case at a height convenient for ironing.

3,732,640

INDIVIDUAL IDENTIFICATION DEVICE

Donald H. Changnon, Worth, Ill., assignor to U.S. Research & Development Corp., Des Plaines, Ill.

Filed Aug. 5, 1970, Ser. No. 61,150
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 **17 Claims**



An improved individual identifying device (e.g., a credit card) comprising a support base (e.g., an opaque vinyl plastic plate), an individual identifying image (e.g., individual photograph and/or signature) imposed photographically with photosensitive ink on the support base, and a transparent protective cover (e.g., vinyl plastic) laid down (e.g., by laminating) over the image, wherein the support base and the image imposed thereon and the transparent protective cover are unified into an indivisible combination whereby any attempt to alter the photographic image would deform the identification device.

3,732,641

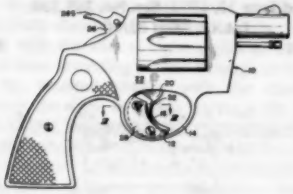
TRIGGER SAFETY FOR HANDGUNS

Michael Adajian, East Hill Road, Canton, Conn.

Filed Oct. 18, 1971, Ser. No. 190,341
Int. Cl. F41c *27/10, 17/02*
U.S. Cl. 42—1 Y **11 Claims**

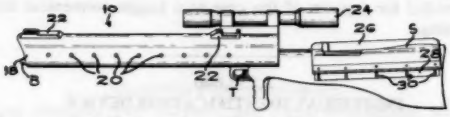
A trigger safety lock for firearms in which an insert fits in place between the guard and trigger at the rear of the trigger and within the confines of the guard as held in place by flanges

engaging the sides of the trigger to block trigger actuation. The insert presents a puzzle to the uninitiated as to its release,



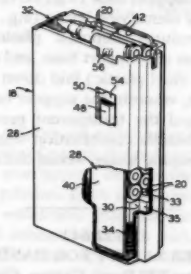
yet for the initiated, is easily and quickly released and falls out of the way for immediate use of the firearm.

3,732,642
DUAL SIGHT ATTACHMENT FOR A GUN
Charles W. Bray, 4466 Fillmore Street, Agnew, Calif.
Filed May 12, 1971, Ser. No. 142,480
Int. Cl. F41g *1/00, 1/38*
U.S. Cl. 42—1 S **3 Claims**



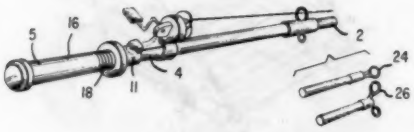
A dual sight attachment for a gun including a body member rotatably supported on the gun barrel enabling either of two sights to be brought into operative disposition.

3,732,643
CARTRIDGE MAGAZINE
Warren W. Wells, Silvis, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 17, 1968, Ser. No. 760,320
Int. Cl. F41c *25/02*
U.S. Cl. 42—50 **10 Claims**



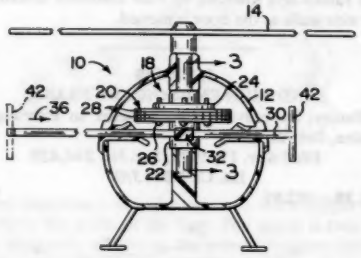
A cartridge magazine includes a case fabricated from plastic with an insert of metal installed therein to bear the high stresses applied to the magazine and the impact contacts of firearm structures therewith.

3,732,644
FISHING ROD
Arthur Kavanagh, 393 West Palmer Avenue, Morrisville, Pa.
Filed Mar. 23, 1971, Ser. No. 127,272
Int. Cl. A01k *87/04, 87/06*
U.S. Cl. 43—22 **1 Claim**



An improved fishing pole is provided with means for selectively mounting a fishing reel at various locations spaced circumferentially and longitudinally along the pole. The pole may be provided with line guide means having eyelets of different sizes and designs circumferentially arranged along the intermediate length of the pole to correspond with the location of the associated reel. A unique tip line guide may be provided which may be stationary or of a swivel nature. The improved fishing rod of the present invention enables a user to employ a single pole with various different types of fishing reels for meeting the needs dictated by the different types of fishing and the different types of terrain encountered during a fishing trip.

3,732,645
FRICTION DRIVE TOY
Emanuel A. Winston, 871 Marion Avenue, Highland Park, Ill.
Filed Mar. 31, 1971, Ser. No. 129,877
Int. Cl. A63h *27/12*
U.S. Cl. 46—75 **8 Claims**

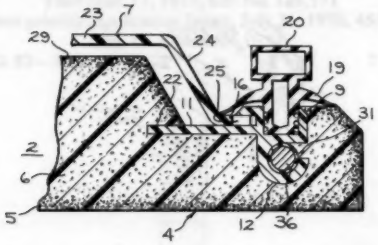


A mobile toy of the type designed to move over a surface or through the air and comprising an energy storing rotary element in the form of a flywheel which, when set into rotational motion, provides energy to propelling means thereby causing movement of the toy. The flywheel includes a driving surface formed thereon and designed to movably engage a driving member in the form of an elongated, flexible shaft capable of at least partially surrounding the flywheel in cooperative relation to the driving surface. Guide means are provided to maintain the driving member in working engagement with the flywheel. Relative movement between the drive member and the flywheel causes rotation of the flywheel and movement of the toy.

3,732,646
REFRIGERATOR DOOR CONSTRUCTION

Julius B. Horvay, and Earl H. Magester, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 23, 1971, Ser. No. 211,526
Int. Cl. E06b 7/16
U.S. Cl. 49—487 4 Claims

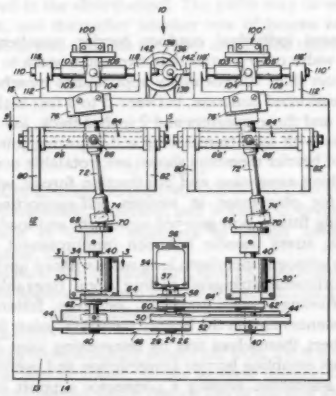


A refrigerator door for closing the access opening to a refrigerated cabinet comprising a smooth skinned foamed plastic body member forming the outer surface of the door, a liner forming the inner surface of the door and an insert molded into the body member having an exposed channel portion for receiving and anchoring the edges of the liner. The insert also preferably includes a hollow anchoring portion extending along one side of the body member, the ends of which receive a thimble forming part of the hinge structure for pivotally mounting the door on a cabinet.

3,732,647
POLISHER-FINER MACHINE

Joe D. Stith, Muskogee, Okla., assignor to Coburn Manufacturing Company, Inc., Muskogee, Okla.

Filed Aug. 5, 1971, Ser. No. 169,224
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—54 12 Claims

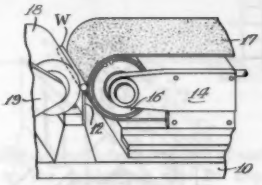


An apparatus for engaging the lapping surface of a tool with a surface to be lapped by means of driving elements which cause a relative "break-up" motion between said surfaces.

3,732,648
REGULATING WHEEL

Robert L. Schaller, Camillus, N.Y., assignor to Sundstrand-Engelberg, Inc., Syracuse, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,683
Int. Cl. B24b 5/30
U.S. Cl. 51—103 R 7 Claims

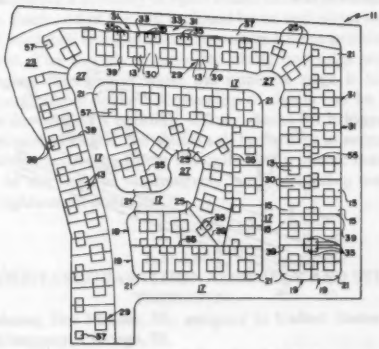


A regulating wheel for backing up a tubular workpiece in opposition to a grinding wheel in a centerless grinding apparatus, including a drive shaft, a hub fixed on the drive shaft, a sleeve around the hub in spaced relation thereto and having a frictional work-engaging outer surface, resilient sealing rings around the hub at axially spaced positions and engaging the sleeve to define an annular fluid-tight chamber around the hub between the hub and the sleeve, conduit means through the shaft and the hub for supplying fluid under pressure to the fluid chamber to yieldably urge the sleeve to a position concentric with the hub, at least one radially disposed projection on the hub positioned loosely in a recess in the sleeve, to cause rotation of the sleeve with the hub while permitting radial movement of the sleeve eccentric to the hub, and snap rings in the sleeve engaging opposite ends of the hub to limit movement of the sleeve axially relative to the hub, whereby the sleeve on the rapidly rotating wheel is adapted to yield radially if the work is not precisely round.

3,732,649
BUILDING ARRANGEMENT

Masud R. Mehran, P.O. Box 849, Livermore, Calif.

Filed Mar. 12, 1971, Ser. No. 123,562
Int. Cl. E04h 1/00
U.S. Cl. 52—169 3 Claims



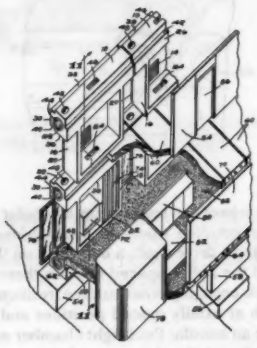
A building arrangement wherein two adjacent house lots are provided with separate single family homes having separate house walls running along substantially the same portion of the common edge property line of the adjacent lots.

3,732,650

PREFABRICATED EXTERIOR WALL UNIT

Willard E. Gwilliam, Plymouth; Carl S. Buchman, Sharon, both of Mass., and Robert Hall, West Haven, Conn., assignors to Universal Prestressed Concrete Co., Inc., Plymouth, Mass.

Filed Jan. 18, 1971, Ser. No. 107,331
Int. Cl. E04b *2/66*
U.S. Cl. 52—221 10 Claims



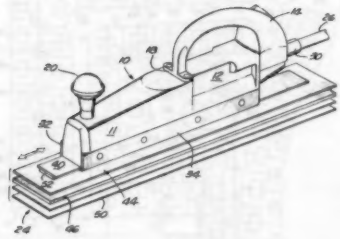
A prefabricated exterior wall unit for use in constructing a multi-story building. The wall units are approximately one story high, are erected side-by-side and are stacked either in vertical alignment or offset. Each wall unit has an exterior panel, flanges extending inwardly from the panel side and bottom edges, and a horizontal top support member at the top of and extending inwardly from the exterior panel. The top support member has formed therein an air or water duct for communication with remotely located heating or cooling equipment. The wall unit is adapted to be enclosed with an interior door to house room heating and cooling units and to provide a storage area.

3,732,651

FIBERGLASS SHOE FOR SANDING TOOLS

Harvey B. Rodstein, 6419 Shenandoah, Los Angeles, Calif.

Filed Sept. 9, 1970, Ser. No. 70,849
Int. Cl. B23b *23/04*; B24d *11/02*, *15/04*
U.S. Cl. 51—358 2 Claims



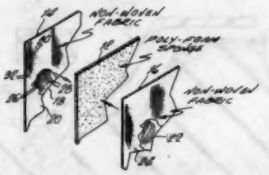
A shoe for sanding and rubbing tools is made of laminations of fibre glass of predetermined thickness to provide the right amount of stiffness, flexibility and 100 percent memory. For orbital machines, a vinyl rubbing surface is bonded to the circular shoe with a peripheral edge part forming a tire bonded to the edge of the shoe.

3,732,652

NON-WOVEN, SPONGE LAMINATED CLOTH

Henry P. Furgal, Bernardsville; Pasquale J. Falivene, and Cesare N. Marchesani, both of Union City, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 14, 1971, Ser. No. 134,003
Int. Cl. B24d *11/00*
U.S. Cl. 51—401 7 Claims



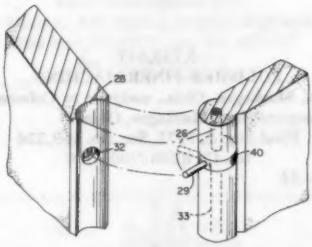
A heavy duty scouring cloth suitable for cleaning, dusting, or waxing, and especially adapted for use as a bathroom mat, table pad, or place mat, which includes an inner sponge layer laminated between outer non-woven fabric layers. The fabric layers are themselves formed of laminates of aligned fibers.

3,732,653

BARRIER STRUCTURES AND CONNECTORS IN CONCRETE ASSEMBLIES

William H. Pickett, 44 Lake Road, Framingham, Mass.

Filed Apr. 10, 1970, Ser. No. 27,319
Int. Cl. E04h *17/14*
U.S. Cl. 52—71 30 Claims



Permanent individual outdoor barrier members have a height to width ratio greater than two and a width to thickness ratio greater than 10. For many applications members are of precast reinforced concrete, between 5 to 8 feet high, 1 and 3 feet wide and three-quarters and 2 inches thick, joined at vertical edges with load-transferring self-adjusting joints. Other features of barrier members shown are: rotatable connections for absorbing expansion and contraction forces; wide range rotation for placement at various self-supporting angles; curved snug fitting, non-grouted sight-tight and load-transferring joints; stress transfer between reinforcement rods embedded in adjacent members; long walls without upright bracing or horizontal stringers, resting upon freezable ground without footings; push together, one-way fastening with female fasteners cast in the barrier members; joints formed by the members themselves and by intervening joint cylinders. Connectors emabling barrier construction and useful in other concrete assemblies employ a connector support embedded directly in but rotatable relative to concrete. It can be rotatable on and transfer stress directly to concrete reinforcement and have its surface conform to curved decorative or joint surfaces of the concrete member. The support can define a receiving slot for locking with a male connector, e.g., an extension of a reinforcement rod of another concrete member,

or it can carry a male connector. A female connector embedded in concrete provided with a yieldable void-producing member behind it receives male members, such as push-together male members of another concrete member.

3,732,654

CYLINDRICAL STRUCTURE

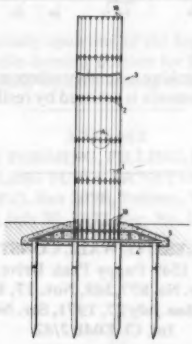
Nariyoshi Tsurumi, Tokyo, Japan, assignor to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan

Filed Mar. 17, 1971, Ser. No. 125,171

Claims priority, application Japan, July 31, 1970, 45/67627

Int. Cl. E04c *3/06, 3/32*

U.S. Cl. 52—245 **7 Claims**



Structural components are provided which are particularly suitable for assembling cylindrical structures such as chimneys. The components include an elongated beam having a generally H-shaped transverse cross section and a relatively short joint which also has a generally H-shaped transverse cross section. The beam includes longitudinally extending generally parallel flanges which are joined by a web portion, and each end of each flange is provided with longitudinal slots adjacent each side. The web may also be provided with a longitudinally extending slot at each end. The joint also includes spaced apart generally parallel flanges joined by a web portion. The structure is assembled by arranging a row of beams side by side and inserting the joints so that flanges thereof extend generally perpendicularly to the flanges of the beams and are received in the slots thereof. The joints may be secured to the beams, and thereafter another row of beams can be arranged end to end with the first row and joined thereto by the joints.

3,732,655

SUSPENDED BUILDING CONSTRUCTION

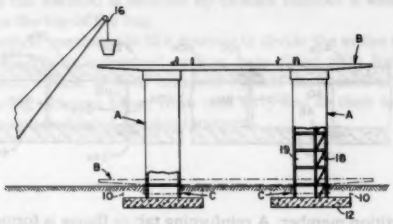
David E. Termohlen, Atherton, and William G. Irvine, Cupertino, both of Calif., assignors to Daniel Aronson, Jr., Burlingame, Calif.

Continuation of Ser. No. 866,707, Oct. 15, 1969, abandoned. This application June 22, 1972, Ser. No. 265,113

Int. Cl. E04b *1/34;* **E04h** *9/02*

U.S. Cl. 52—73 **5 Claims**

A building is dependingly supported from the top of at least one central pier or tower. At the topmost portion the pier is provided with girders which rest on top of the pier and span at their respective ends outwardly and immediately over the sides of the pier. The floors are dependingly supported from the protruding girders at the top of the tower along hanger straps which are disposed immediate the sides of the pier. Floor supporting girders for each successive and depending floor are fastened at preselected intervals to the hanger straps, span outwardly of the towers to support the floors of the building, and provide for pendulous movement of each of the floors with respect to the supporting pier to impart improved earthquake resistance to the structure.



3,732,656

ROLL-UP CORRUGATED STEEL ROOFING SHEET MATERIAL

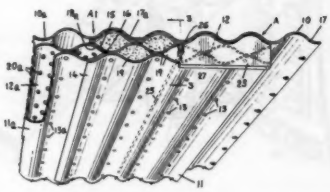
Eli I. Robinsky, 66 Lytton Boulevard, Toronto, Ontario, Canada

Filed Dec. 6, 1971, Ser. No. 204,875

Claims priority, application Canada, July 12, 1971, 117,912

Int. Cl. E04d *5/10*

U.S. Cl. 52—108 **9 Claims**



A resilient corrugated building sheet having three or more plys of corrugated thin sheets secured together so that crests of one ply rests on the reverse crest of the contiguous ply, the crests of contiguous plys being the mirror image of each other thereby forming a plurality of open ended cells in parallel relationship. Each end of the cell is closed by an end plate, the end plates of each cell being interconnected by a tie to prevent displacement. The top ply is provided along one edge with an overhanging corrugation while the opposite edge is formed with a longitudinal socket. A plurality of sheets can be fitted together for roofing a building, a floor, decks for bridges, etc. For increased strength, the sheets can be formed in secondary corrugations and/or by filling the cells with a plastic material, formed in the cells or alternatively, with insulating material such as lightweight concrete.

3,732,657

DEMOUNTABLE PARTITION ASSEMBLY AND STUDS THEREFOR

Nels Nelsson, Des Plaines, Ill., assignor to United States Gypsum Company, Chicago, Ill.

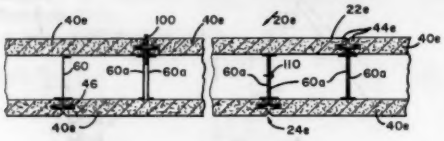
Filed Oct. 5, 1970, Ser. No. 77,997

Int. Cl. E04b *2/78*

U.S. Cl. 52—241 **13 Claims**

A demountable partition assembly featuring two rows of partition members, such as wallboard panels, and floating studs, each stud of which interchanges only one row and abuts against, without interengaging, the other row. One form of the

stud interengages by a single flange a kerf in only one of the partition members, permitting selective accessibility to that



partition member. A reinforcing tab or flange is formed in the stud for abutting the back surface of the interengaged partition member.

3,732,658

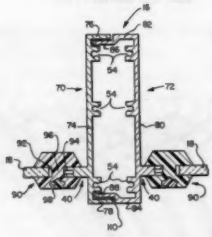
STORE FRONT FRAMING SYSTEM

J. Thomas Sarvay, Lakewood, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 878,465, Nov. 20, 1969, abandoned. This application Sept. 24, 1971, Ser. No. 183,449

Int. Cl. E04c *2/38, 2/46*

U.S. Cl. 52—282 **16 Claims**



A system of standardized extrusions which may be utilized in framing systems for enclosing a wide variety of store front openings as well as other types of building wall openings. Each of the basic framing elements includes either a special gasket receiving flange or a spline receiving channel for cooperation with elastomeric panel mounting gaskets in sealing by retaining thin rigid construction panels in a desired mounted position. The system includes frame member elements for forming the framing system sills and jambs, divider elements for forming horizontal or vertical mullion structural members and adaptor clips for permitting various sizes of gaskets and glass panel combinations to be used with the system without the necessity for altering the dimension of the framing elements or the panel receiving flanges.

3,732,659

ADJUSTABLE LOCKING ASSEMBLY

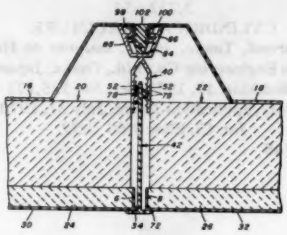
Robert L. LaBarge, Allegheny, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 128,920, March 29, 1971, abandoned. This application Apr. 27, 1971, Ser. No. 137,886

Int. Cl. E04b *1/66*

U.S. Cl. 52—461 **19 Claims**

An adjustable locking assembly having a female member provided with a base portion and a pair of spaced forwardly directed sidewalls, all cooperating to define a forwardly open channel. A male element, having a body portion and a locking portion, extending into the forwardly open channel. One of the elements having angularly transversely oriented resiliently deflectable fins and the other having a plurality of transverse ribs defining a plurality of notches. At least one resiliently deflectable fin element having a free end engaged within a



notch to establish locking assembly wherein separation of the male and female elements is resisted by resilient fin and notch engagement.

3,732,660

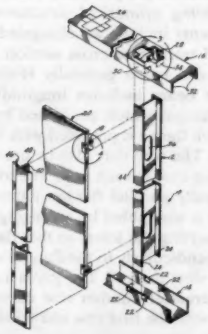
NON PROGRESSIVE WALL CONSTRUCTION

George J. Byssing, 1549 Poppy Peak Drive, Pasadena, Calif.

Continuation of Ser. No. 877,248, Nov. 17, 1969, abandoned. This application July 27, 1971, Ser. No. 166,422

Int. Cl. E04b *2/82*

U.S. Cl. 52—489 **10 Claims**



There is provided a non-progressive wall construction system inherently capable of being formed into a structure for supporting conventional rigid wallboards which attach to the support structure in any random fashion using interlocking clips.

3,732,661

APPARATUS FOR MAKING A HEAT-SEALABLE BAG

Irving Goldberger, Island Park, and Murray Maltz, Brooklyn, both of N.Y., assignors to National Environmental Corp., Brooklyn, N.Y.

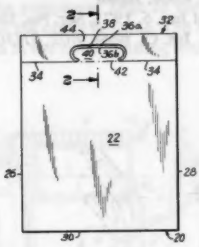
Filed Jan. 18, 1971, Ser. No. 107,290

Int. Cl. B65b *61/14, 51/10;* **B65d** *33/10*

U.S. Cl. 53—134 **3 Claims**

An apparatus for manufacturing a bag comprising a heat-sealable thermoplastic sheet material and having an initially open end through which material is placed in the bag. The bag has a handle and is closed by heat sealing the initially open end thereof. The handle may be applied to the bag prior to the heat sealing thereof or the handle can be formed in the bag

simultaneously with the heat sealing thereof. The apparatus for sealing the bag and forming the handle therein includes a



support for the initially open end of the bag and a heat-sealing wire having a handle-forming portion for forming in the bag a handle simultaneously with the sealing of the bag.

3,732,662

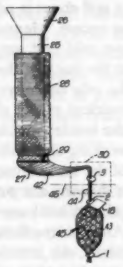
METHOD OF FORMING, FILLING, CLOSING AND LABELLING TUBULAR NETTING BAGS

Floyd G. Paxton, P.O. Box 2098, Yakima, Wash.

Filed July 30, 1971, Ser. No. 167,698

Int. Cl. B65b *9/12*

U.S. Cl. 53—14 **3 Claims**



Tubular netting is telescoped axially for storage purposes on a vertical hollow mandrel and is withdrawn from the lower end of this as needed in forming and filling bags. The method employs a label-bearing closure strip made of sheet plastic weakened transversely at intervals to facilitate its being divided progressively into a sequence of individual closures each of which is applicable to the tubular netting to close the same wherever the latter is bunched compactly in rope form. Alternate closures (even numbered) have cardboard labels about three inches square glued thereto. Odd numbered closures carry no labels.

A conventional plastic, label-bearing bag closure applicator is placed adjacent the lower end of the mandrel to facilitate feeding said closure-label strip to a convenient closure applying station.

The bag forming starts with the operator withdrawing a section of the tubular netting downwardly, bunching a lower end portion of this in rope form and closing it by applying closure number 1 thereto. A quantity of loose product suitable for net bagging is now introduced through the hollow mandrel into said closed bottom section of the tubular netting, and this section, so loaded, is spun in the hands to twist and bunch the netting in rope form for several inches just above the product. While so bunched, this portion of the tubular netting has applied thereto in rapid succession, and at points vertically spaced about two and one-half inches, closures numbers 2 and 3. The netting rope between these closures is then presented to a sharp blade mounted on one of the diverging guide plates of the applicator as the netting rope is withdrawn from the latter, after applying closure number 3, to sever said rope leaving about three-quarters of an inch of the latter below closure number 3 and an inch and three-quarters of it above label-bearing closure number 2. The first netting bag formed and closed by the method is labelled by closure number 2 which also closes the top of the bag.

The method continues in like manner to divide the entire tubular netting into individual netting bags filled with loose product and closed at their bottoms by odd numbered non-label-bearing closures taken from said strip and at their tops by even numbered label-bearing closures.

3,732,663

METHOD FOR PRODUCING CIGARETTE PACKAGES

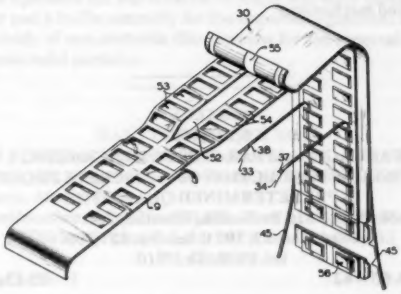
Erwin Helmut Geldmacher, Tannenwaldallee 25, 638 Bad Homburg, Germany

Filed May 6, 1970, Ser. No. 35,116

Claims priority, application Germany, May 8, 1969, P 19 23 588.2; Aug. 7, 1969, P 19 40 302.2; Aug. 7, 1969, P 19 40 312.4; Aug. 7, 1969, P 19 40 313.5

Int. Cl. B65b *19/02, 47/10;* **B65d** *85/10*

U.S. Cl. 53—14 **22 Claims**



The specification describes a method for the production of cigarette packages in which a first foil web of thermoplastic material, supplied from the supply roll, and having a width exceeding the length of the cigarettes to be packed, is pressed into troughs corresponding to the size of the cigarettes to be packed, cigarettes are placed in the troughs, a second flat web of foil supplied from a second supply roll is placed over the cigarettes to cover them and the webs are connected together. Following this the two webs are separated to form sections which constitute substantially complete packages. The shaping of the troughs accepting the cigarettes individually occurs in the one first foil web on a drum provided with molds which can be placed under suction.

3,732,664

COLLATING AND INSERTING MACHINE CONTROL SYSTEM

Frank M. Blossom, Glen Ellyn, Ill., and John Silberbauer, St. Paul, Minn., assignors to The Reuben H. Donnelley Corporation, New York, N.Y.

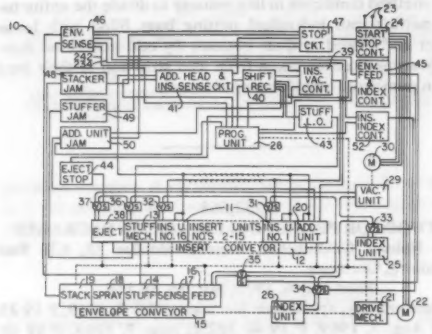
Filed Mar. 25, 1971, Ser. No. 127,924

Int. Cl. B65b *57/16*

U.S. Cl. 53—57 **29 Claims**

Control system for a collating and inserting machine in which signals are produced from failures in the feed of addressed pieces, inserts, or envelope and are applied to shift register and logic circuitry to control the operation of feed and conveyor mechanisms in a manner such that random failures of feed mechanisms do not result in a defective final product or in a shut-down of the machine. After any such random

failure, any unnecessary succeeding operations are automatically locked out and any material accumulated from any incomplete operation is ejected. However, a counter for each



feed mechanism counts failures during consecutive cycles and the machine is automatically shut down when the count exceeds a certain number, determined by a selector switch for each feed mechanism.

3,732,665

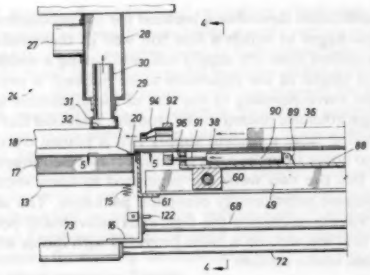
PACKAGING APPARATUS FOR PACKAGING CONTINUOUS PRODUCTION OF A DISCRETE PRODUCT IN PREDETERMINED QUANTITIES

Robert W. Pitts, 7710 Barbenton, Houston, Tex.

Filed Mar. 23, 1971, Ser. No. 127,309

Int. Cl. B65b *57/10*

U.S. Cl. 53—62 **13 Claims**



A packaging machine which incorporates a tray or trough which feeds continuous production of a discrete item to one of a pair of reciprocating trays, there being a gate and counter mechanism for determining the number of products on the reciprocating trays, one of the trays being loaded at a time. The gate closes to cut off additional products for one of the two trays which is then indexed to an out-of-the-way position to thereafter permit the counting and accumulation of products on the other of the two trays. For the tray which is indexed to the side, a ram mechanism drives all of the products off of the tray through a set of stuffing horns into an open container or bag. The machine includes a pair of bag openers which preferably cooperate with two stacks of closed bags. The topmost bag on each stack is opened. The ram drives the product into the open bag on one of the two stacks, and the filled bag is kicked from the table.

3,732,666

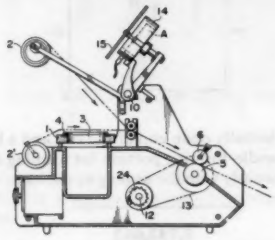
FILM PACKAGING MACHINE

Kei Nakamura, 183-99 Ohya Nishihirano Mikagesho, Higashinadaku, Kobe, Japan

Filed Jan. 6, 1971, Ser. No. 104,205

Int. Cl. B65b *9/02, 51/30*

U.S. Cl. 53—182 **3 Claims**



A film packaging machine which comprises a set of upper and lower roll sheets of synthetic resin, and a bed having a recess and disposed behind the roll sheets. The lower roll sheet passes along the bed, such as to cover the recess provided in the bed. A marginal elastic ring is disposed around the recess, and the lower roll sheet is adapted to put an article to be packaged over the recess. Means for passing upwardly the upper roll sheet above said bed are provided, to pile it upon the lower roll sheet at the back of the body. A feed roller and a press roller passes the pile therebetween. A cutter and a hot plate includes a cylindrical cutter on the outside and a ring-shaped hot plate on the inside, which constitutes a single body. A hand lever and a working shaft, the latter being turned back and forth by means of the hand lever. The working shaft interlocks with the cutter. Means are provided for conveying the upper and lower roll sheets backwardly upon lifting the cutter and the hot plate. An intermediate shaft is operated upon turning the working shaft. An interlocking device is arranged for transmitting the turning of the intermediate shaft of the feed roller. Means are arranged for pressing down the upper roll sheet upon moving downwardly the cutter and the hot plate. The upper roll sheet passes obliquely by the cutter and the hot plate, to wind back the upper roll sheet. Both the roll sheets are kept at rest without transmitting the turning of the working shaft to the intermediate shaft and, accordingly, to the feed roller by the free wheel fitted to the intermediate shaft. The upper roll sheet is piled upon the lower roll sheet for covering the article to be packaged. The cylindrical cutter and the ring-shaped hot plate cutting and heat-sealing simultaneously both roll sheets on the elastic ring, and the article is released out of the machine through the recess.

3,732,667

VACUUM CLEANER

Charles T. Fromknecht, and Martin E. Harbeck, both of Anderson, S.C., assignors to The Singer Company, New York, N.Y.

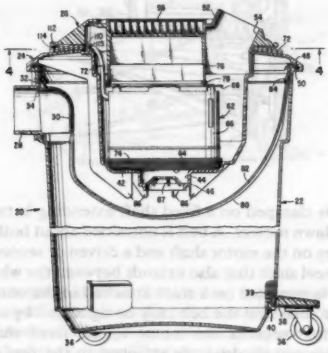
Filed Apr. 13, 1971, Ser. No. 133,655

Int. Cl. B01d *46/02*

U.S. Cl. 55—373 **4 Claims**

A vacuum cleaner including an open top dirt container having an air inlet located adjacent to the upper portion thereof and having a baffle mounted behind the suction inlet to direct the inlet air downwardly and circumferentially toward the lower walls of the container. A cover housing assembly is mounted in and removably secured to the upper peripheral portion of the dirt container by a pair of plastic latches having cam surfaces which snap over cooperating surfaces on the container. A top housing having a carrying handle and an ex-

haust port formed therein is secured to the cover housing by four screws to entrap the motor-blower unit and the latches therebetween. A peripheral slot within which the electric power cord of the motor-blower unit is adapted to be stored is formed between the peripheral edge of the top housing and the upper surface of the cover housing. The motor blower unit sits in a seat formed in the cover housing with its inlet communicating with the interior of the dirt container by means of an aperture formed within the seat, and has its discharge outlet in communication with the exhaust port of the top housing. Both a disposable paper filter and a cloth secondary filter may be mounted between the dirt container and the cover housing about the entire periphery thereof to prevent dirt from being drawn through the motor blower unit from the dirt container.

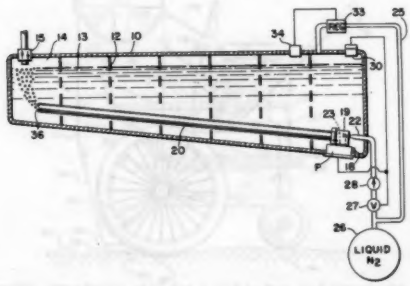


3,732,668

FUEL TANK INERTING SYSTEM

Richard A. Nichols, Santa Ana, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 24, 1971, Ser. No. 118,300
Int. Cl. B01d *19/00*
U.S. Cl. 55—160 **8 Claims**



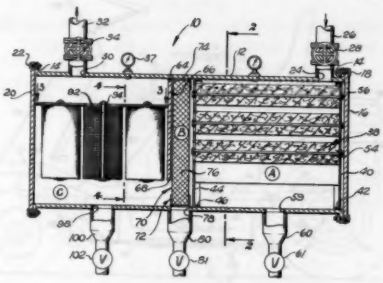
A system for inerting aircraft fuel tanks comprising mixing of the fuel and an inert gas within a tube whereby the inert gas scrubs the fuel of oxygen dissolved therein and dilutes the same, the mixture being discharged from the tube into the fuel tank where the inert gas and the oxygen rise to the tank vapor space where a portion of the same may be vented to atmosphere but in any case the oxygen content in the vapor space is less than about 12 percent whereby flame and explosion cannot propagate within the tank.

3,732,669

FUEL GAS SEPARATOR

R. William Chambers, Rialto, Calif., assignor to Separation and Recovery Systems, Inc., Santa Ana, Calif.

Filed Sept. 27, 1971, Ser. No. 183,832
Int. Cl. B01d *50/00*
U.S. Cl. 55—321 **10 Claims**



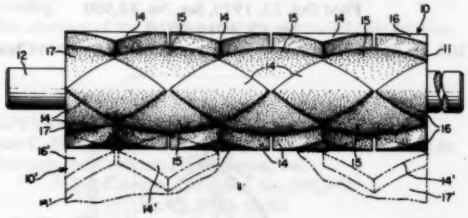
Apparatus for removing water, gasoline and solid particles from fuel gas as it flows therethrough, including a bank of filter cylinders for the removal of water and solid particles, a filter pad a baffle assembly for the removal of gasoline, and an assembly of non-wettable filter screens for the removal of additional solid particles.

3,732,670

HAY CONDITIONER ROLL

Paul E. Milliken, Massillon, Ohio, and Larry L. Bell, Hanover Park, Ill., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 874,551, Nov. 5, 1969, abandoned.
This application July 14, 1971, Ser. No. 162,553
Int. Cl. A01d
U.S. Cl. 56—1 **20 Claims**



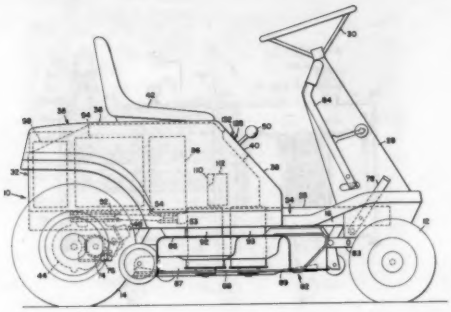
A molded rubber roll for use in conjunction with one or more additional rolls of similar construction on a hay conditioning machine. The roll has a plurality of circumferential rows of spaced apart radially outwardly extending lugs which intermesh with similar spaced apart lugs on a similar roll when a pair of such rolls are mounted in parallel relationship on a hay conditioning machine. The lugs may be of rectangular shape or may be molded in other shapes, such as diamonds, hexagons, parallelograms or X or L shapes. Some configurations may be made by molding the roll in one continuous length in its finished form. Other configurations may be made by molding or extruding a long length of axially ribbed stock having an axially splined center hole therethrough, then cutting the piece of stock transversely into separate segments and mounting the segments on a spline shaft with each segment being rotated circumferentially with respect to the adjacent segment so that the lugs of one segment are circumferentially offset from the lugs of the adjacent segment.

3,732,671

ELECTRIC DRIVE RIDING MOWER

David Thomas Allen, Horicon, Wis., and David Linley Apple, Coal Valley, Ill., assignors to Deere & Company, Moline, Ill.

Filed Aug. 31, 1971, Ser. No. 176,603
Int. Cl. A01d 69/04
U.S. Cl. 56—10.2 26 Claims



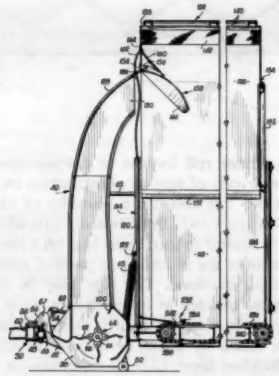
An electric drive riding mower has a mobile main frame mounted on a pair of rearward drive wheels and steerable front wheels and a rotary mower unit suspended from the main frame between the front and rear wheels. The drive wheels are driven by a direct current motor through a belt drive and a change speed mechanical transmission, and the mower unit includes a pair of rotary blades respectively driven and directly connected to a pair of direct current motors. The traction and mower motors are connectible to a series of batteries carried on the main frame through an electric control system, which includes a main switch and a mower switch actuatable by the operator for controlling relays, which control the connection of the motors to the battery.

3,732,672

STACK FORMING LOADER

Raymond A. Adee, Newton; Dean P. Brooks, Hesston, and John Dale Anderson, Canton, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Oct. 22, 1970, Ser. No. 82,900
Int. Cl. A01d 87/10
U.S. Cl. 56—13.3 4 Claims



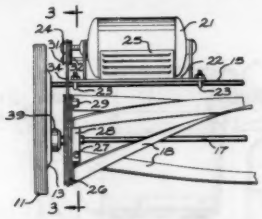
A stacking implement picks the precut crop off the ground, elevates the crop and blows it into a wagon. The crop is periodically compressed in the wagon, a crop-distributing deflector in the wagon is tilted in response to actuation of the compressor, and a stack unloading ramp is also raised and lowered by actuating the compressor.

3,732,673

MOTOR DRIVE FOR A LAWN MOWER

Lucius A. Winn, Jr., 739 40th St., Oakland, Calif.

Filed July 27, 1971, Ser. No. 166,362
Int. Cl. A01d 55/20
U.S. Cl. 56—249 3 Claims



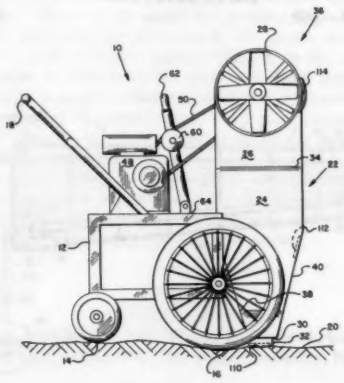
A motor is clamped on a fixed shaft extending between the wheels of a lawn mower. A belt is entrained about both a drive or first pulley on the motor shaft and a driven or second pulley on a rotary reel shaft that also extends between the wheels. An idler pulley is mounted on a shaft attached to the outer housing or frame such that the belt may be tightened by adjusting the clamp that secures the motor to the fixed shaft. The second pulley can be drivingly attached to the reel shaft by various means such as radial set screws disposed in a hub of the pulley and/or a protuberance formed on the pulley for cooperative engagement with the cutting reel of the mower to thereby turn the shaft and reel. Two unidirectional clutches (a right and a left) are arranged and oriented such that reel rotation in a forward direction will drive the wheels in a forward direction.

3,732,674

ARTICLE SHREDDING MACHINE

Calvin J. Guillory, 109 Avant St., West Monroe, La.

Filed Apr. 14, 1972, Ser. No. 244,112
Int. Cl. A01d 73/00
U.S. Cl. 56—13.1 7 Claims



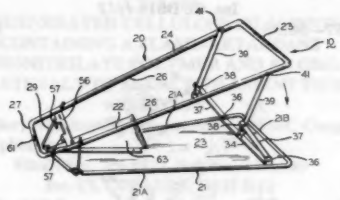
An article shredding machine having new and novel means for guiding the articles to be shredded into the machine with means provided to pre-shred the articles prior to their introduction into the shredding mechanism. The improved shredding mechanism comprises a plurality of generally rectangular shaped blades rotating in juxtaposition to a plurality of generally rectangular shaped fixed blades. Also provided on the machine is a blower downstream of the shredding mechanism to blow the finely shredded particles away from the machine.

3,732,675

CATCHER FOR ROTARY MOWER

William H. Armstrong, Bloomfield Hills, Mich., assignor to Montgomery Ward & Co., Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 227,818
Int. Cl. A01d 35/22
U.S. Cl. 56—202 4 Claims



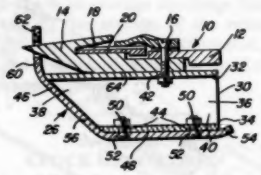
A grass cuttings catcher for a rotary type mower having a discharge opening consists of a pair of frames surrounded by a flexible shroud including means for securing one of the frames to the deck of the mower. The frame members and the shroud define a chamber for the storage of the cuttings. The shroud is provided with an end wall supported by the frame members and is formed from flexible material, including means for holding the end wall into position to the shroud. The catcher is supported as a cantilever from the mower deck, and the lower frame of the catcher is provided with a deflector causing the cuttings to be diverted upward within the chamber so as to fall to the lower part of the chamber at a point remote from the discharge opening of the mower. The catcher is also characterized by upper and lower frame members having a toggle connection therebetween whereby the catcher may be collapsed and stored readily.

3,732,676

GROUND ENGAGING SICKLE BAR SPACER

Joseph P. Watson, Rt. 1, Box 43A, Elizabethtown, N.C.

Filed Jan. 28, 1972, Ser. No. 221,539
Int. Cl. A01d 55/10
U.S. Cl. 56—313 2 Claims



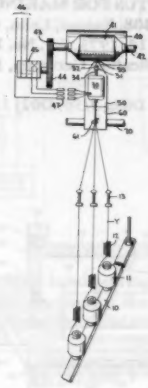
A readily attachable skid for a sickle bar and attachable to the latter with little effort generally centrally intermediate the opposite ends of the sickle bar. The skid or runner is dependingly supported from the corresponding sickle bar and functions to maintain the central portion of the sickle bar at an elevation of at least three inches above the ground surface over which the lower portion of the skid or runner is moving. The skid is of a structure so as to be non-yielding and thereby eliminates sway and sag of the associated sickle bar and insures that the sickle bar will not have any of its cutting portions engaged with the ground due to slight irregularity in the ground surface or sag of the sickle bar.

3,732,677

YARN DUAL TWISTER AND DOUBLER

Warren A. Seem, 2000 South Ocean Lane, North Wales, Pa.; Nicholas J. Stoddard, 307 Country Road, Berwyn, Pa., and Robert W. Stoddard, 1316 West Chester Pike, Apt. 12-H, West Chester, Pa.

Filed Apr. 29, 1970, Ser. No. 32,875
Int. Cl. D02g 1/04
U.S. Cl. 57—77.3 9 Claims



Disclosed is a textile yarn twisting apparatus consisting of a rotating hollow tube with a twist trapping device at one end thereof and means to periodically reverse the direction of rotation of said tube. The twisting apparatus may be positioned on the traverse mechanism of a yarn winding machine in close proximity to yarn take-up means, and serves to insert a measurable twist in the yarn. Disclosed is a method and apparatus for the insertion of a twist of alternately opposing directions in selected successive sections of textile yarn, while being advanced in a continuous process with or without the application of heat while under controlled tension. Also disclosed is a method and apparatus for producing a finished take-up package of yarn suitable for further handling or processing.

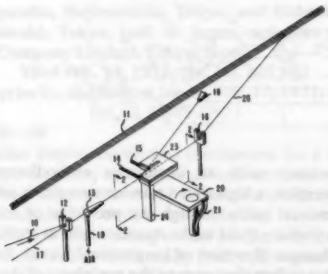
This abstract of the invention is furnished solely for the purpose of satisfying Rule 72(a).

3,732,678

APPARATUS FOR JOINING FILAMENTS TO A TOW

Walter C. Berry, Jr., Staunton, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 4, 1971, Ser. No. 195,572
Int. Cl. B65h 69/06
U.S. Cl. 57—22 2 Claims



An apparatus for merging a small bundle of continuous filaments into a moving tow of filaments. The filaments to be

added are merged and entangled by an air jet with a portion of the moving tow that has been temporarily separated from the main stream of the tow. After entanglement, the tangled mass strikes a guide which forces a movable support to give-way, allowing the loose end of the filaments to be added to be severed at a point close to the point of entanglement. This prevents the loose end from wrapping on a subsequent guide roll.

3,732,679

WINDING APPARATUS FOR MAKING A WIRE HELIX

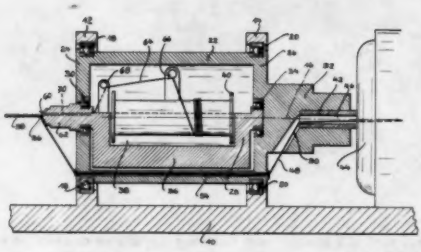
Hans-Ulrich Sohr, D-5408, Nassau, Lahn, Germany

Filed May 14, 1971, Ser. No. 143,580

Claims priority, application Germany, May 14, 1970, P 20 23 560.3

Int. Cl. D02g *3/36*; D02j *13/00*

U.S. Cl. 57—34 HS **10 Claims**



In an apparatus for making a wire helix by winding a wire about a mandrel by means of a rotating wire guide which withdraws wire from a storage reel, the mandrel is rotatably supported in the wire guide and has such a moment of inertia with respect to its axis of rotation that any torque transmitted by the rotating wire guide to the mandrel is insufficient to cause a revolving displacement of the latter.

3,732,680

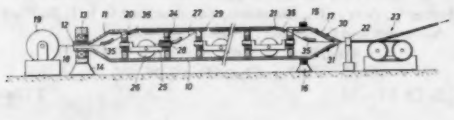
WIRE GUIDE FOR A CABLING MACHINE

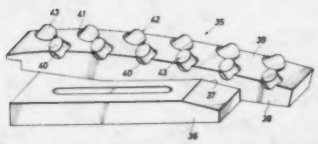
Miller M. Barrier, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,326

Int. Cl. D07b *3/12*

U.S. Cl. 57—58.34 **6 Claims**





In accordance with an illustrative embodiment of the present invention, a high speed tubular strander is adapted for making armored cable through the provision of roller guide assemblies that are fixed to the strander tube at stations where the core changes direction of longitudinal travel. Each guide assembly has rollers that engage the periphery of the core and function to impart thereto a component of lateral motion so as to drive the core in reverse rotation to that of the tube to eliminate undesirable twist in the finished cable.

3,732,681

OPEN-END SPINNING DEVICE WITH AN OPENING-UP ROLLER

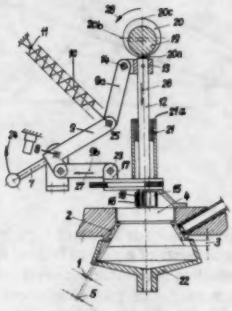
Gerhard Kutscher, and Rolf Wehling, both of Bremen, Germany, assignors to Fried, Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Feb. 15, 1972, Ser. No. 226,627

Claims priority, application Germany, Feb. 23, 1971, P 21 08 481.1

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 **11 Claims**



An open-end spinning device with an opening-up roller, normally coaxial with the spinning turbine, for spinning staple fibers, according to which an axial adjustment of the opening-up roller can be effected while the spinning device is in operation, while an axial change in the cross section of the fiber conveying passage means is possible and the opening-up roller can be made accessible to the operator without disconnecting the opening-up roller from the device.

3,732,682

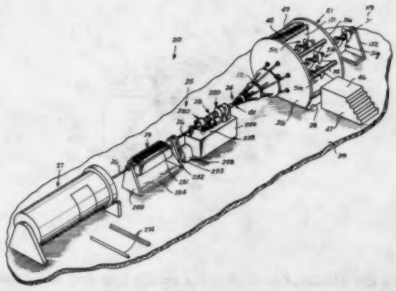
METHODS OF AND APPARATUS FOR TWISTING AND STRANDING CABLE PAIRS IN A TANDEM OPERATION

Francis N. Crotty; William C. Gause, and George E. Hartranft, all of Baltimore, Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 29, 1971, Ser. No. 157,947

Int. Cl. H01b *13/00, 13/04*

U.S. Cl. 57—59 **43 Claims**



A twist is imparted in each pair of a plurality of pairs of insulated conductors for each revolution of an associated flier bow as each of the pairs pass over sheaves at opposite ends of the bow in a high speed twister. Each of the twisted pairs is passed from the twister along a predetermined path through an associated untwist-retwist device in which the twisted pair is untwisted by advancing successive sections of the individual conductors along separate paths and revolving the successive sections of the conductors being advanced along the separate paths about the predetermined path. Subsequent to the suc-

cessive sections of the individual conductors of each of the untwisted pairs being moved away from the associated untwist-retwist device, a double twist is imparted to each pair in a uniform distribution. The plurality of retwisted pairs are moved immediately into a strander to form a cable having a binding applied thereto to thereby retain the uniform distribution of twist.

3,732,683

REGENERATED CELLULOSE FILAMENTS CONTAINING A FLAME-RETARDANT PHOSPHONITRILATE POLYMER AND AN ORGANIC PHOSPHATE SALT TO REDUCE FILAMENT TO METAL FRICTION

Jay M. Feller, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 25, 1971, Ser. No. 128,189
Int. Cl. C09k *3/28*; D01f *3/12*
U.S. Cl. 57—140 R **7 Claims**

Regenerated cellulose filaments and filamentary articles wherein the filaments have dispersed therein a mixture of (1) a substantially water-insoluble, liquid, organic phosphonitrilate polymer and (2) a substantially water-insoluble, organic phosphate salt, are disclosed herein.

3,732,684

PRODUCT AND PROCESS

Tibor Csok, Chadds Ford, Pa., and Karl Franz, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1971, Ser. No. 118,032
Int. Cl. D02g *1/20, 3/04, 3/24*
U.S. Cl. 57—140 BY **9 Claims**

Novel fasciated yarns for the production of crepe fabrics are prepared from a combination of fibers of which from 1 to 40 percent by weight have an average shrinkage that is at least 5 percent above that of the average of the remaining fibers. These yarns exhibit a yarn shrinkage differential, ΔS_{yarn}, of at least 5 percent and a standard deviation, σ, of at least 2.8 in short-term shrinkage variability.

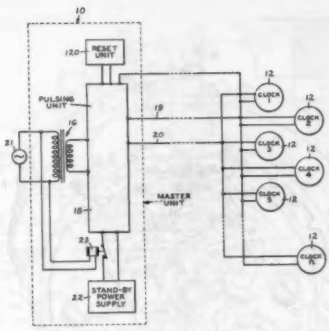
3,732,685

CLOCK MECHANISM

Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Westbury, Conn.

Continuation-in-part of Ser. No. 45,609, June 12, 1970, Pat. No. 3,685,278. This application Apr. 3, 1972, Ser. No. 240,623
Int. Cl. G04c *11/04, 9/00*
U.S. Cl. 58—26 **21 Claims**

A clock mechanism driven by a pulsed stepper motor and having planetary reduction gearing which provides a continuous but resilient connection between the motor and the minute hand of the clock at all times. The motor includes a permanent magnet rotor in direct driving relationship with the minute hand, and the rotor poles serve as a magnetic detent to hold the minute hand in discrete angular positions. The mechanism may be employed either in individual clocks or in the secondary clocks of a master-secondary clock system. In these latter embodiments the secondary clocks additionally include a pair of switches respectively controlled by the minute hand gearing and the hour hand gearing. The switches greatly facilitate the automatic resetting of the clocks in response to appropriate resetting signals from the master unit.

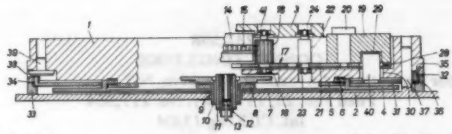


3,732,686

WATCH MOVEMENT INCLUDING ALARM MECHANISM

Roland Zaugg, Grenchen, Switzerland, assignor to A. Schild S.A., Grenchen (Canton of Soleure), Switzerland

Filed Aug. 10, 1972, Ser. No. 279,298
Int. Cl. G04b *23/12*
U.S. Cl. 58—57.5 **8 Claims**



A watch movement comprising an alarm mechanism provided with a vibrating membrane located above the bottom plate, characterized in that the vibrating membrane is an annular plate resting on a supporting ring which is fastened to the bottom plate and pressing against the dial.

3,732,687

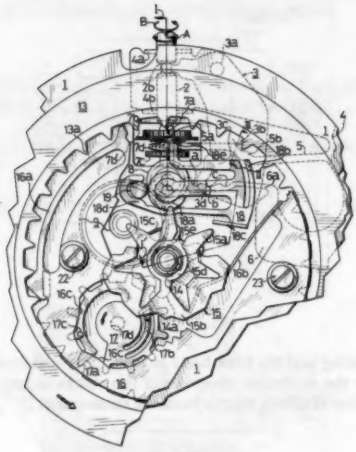
CALENDAR CORRECTION MECHANISM FOR TIMEPIECE

Kenzi Miyasaka, Suginami-ku, Tokyo, and Hidetaka Tutiya, Akishima-shi, Tokyo, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 14, 1972, Ser. No. 225,962
Claims priority, application Japan, Feb. 17, 1971, 46/8285
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **7 Claims**

A calendar display correction mechanism for a timepiece, comprising a manually operable and time-settable stem, a correction wheel adapted for being driven therefrom, a rotatable date calendar display dial, a rotatable day calendar display dial, first motion-transmitting means adapted for establishing a motion-transmitting relationship from said correction wheel to said date dial, second motion-transmitting means adapted for establishing a motion-transmitting relationship from said correction wheel through a day star wheel to said day dial, and mechanical switching means adapted for selective establishi-

ment of either of said first or second motion-transmitting relationship responsive to the direction of rotation of said stem, said mechanism being characterized in that said correction



wheel is mounted on said stem for performing a unitary rotation therewith and that said mechanical switching means and said first and second transmission means are united into one and the same member.

3,732,688

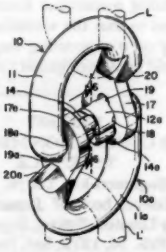
CONNECTING LINKS

Tibor Horvath, 944 Avenue R, Brooklyn, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,564

Int. Cl. F16g *15/04*

U.S. Cl. 59—85 **6 Claims**



Identical, mating connecting links for chain each have a curved shank having ends terminating in an inwardly extending pintle and a plate containing a pintle receiving aperture. Each pintle has a lug formed on its inner end and each aperture has a keyway opening to receive a lug therethrough. The pintle of each link is driven through the plate aperture of the other link when the links are in a maximum folded position. When the lugs pass through the keyway apertures, the links are foldably connected with the inner end of the pintles butting each other and the lugs preventing inward sliding of the plates along the pintles.

3,732,689

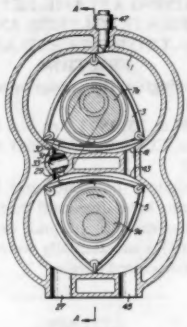
COMPOUND DIESEL ENGINE OF ROTARY-PISTON TYPE

Hiroshi Tado, Suita, and Teruo Morimoto, Nagahama, both of Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed May 24, 1971, Ser. No. 146,028

Int. Cl. F02b *41/02, 53/08*

U.S. Cl. 60—15 **1 Claim**



A compound internal-combustion engine of rotary-piston type having two sets of juxtaposed rotary-piston engine units each including a housing with a bilobed epitrochoidal or approximately epitrocoidal inner surface and a substantially triangular shaped rotor rotatably mounted on an eccentric portion of a shaft journaled in said housing with the apexes thereof adapted to be moved in sliding contact with the inner surface of the housing. One of the engine units works as an internal-combustion engine and the other unit serves as a compressor. The shaft of the second unit runs in the same direction as that of the first unit but at twice the speed, and a rotary control valve is installed between the two units so that air compressed in the second unit is supplied syncronously to the rotation of the first unit.

3,732,690

DEVICE FOR CONVERTING CALORIFIC ENERGY INTO MECHANICAL ENERGY

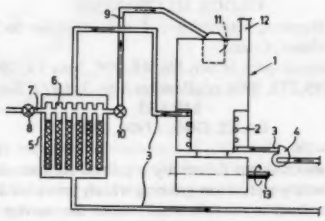
Roelf Jan Meijer, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,503

Claims priority, application Netherlands, Mar. 6, 1970, 7003201

Int. Cl. F02g *1/00*; F17c *11/00*; F17d *1/04*

U.S. Cl. 60—39.46 **5 Claims**



A device such as hot-gas engines, hot-gas turbine, and internal combustion engine for converting calorific energy into mechanical energy comprising at least one combustion

chamber for hydrogen and at least one cooler incorporated in a system of ducts for cooling medium; the combustion chamber can be made to communicate with a hydrogen container containing an alloy of A and B, in which the ratio A:B can vary from 1:3 to 2:17 in powder form, where A is Ca or one or more of the elements of the rare earths, combined with Th and/or Zr and/or Hf, and where B is mainly Ni and/or Co. The hydrogen container and a part of the system of ducts are constructed for heat exchange between the alloy in the hydrogen container and the medium in the system of ducts.

3,732,691

METHOD AND APPARATUS FOR PRODUCING HIGH HYDRAULIC PRESSURE, PARTICULARLY FOR OPERATING A FORGING PRESS

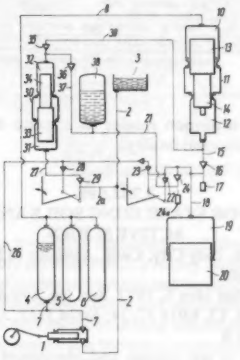
Ernest Muller, Konigsberger Str. 18, Bad Breisig, Germany

Filed Feb. 1, 1971, Ser. No. 111,182

Claims priority, application Germany, Mar. 19, 1970, P 20 13 120.8

Int. Cl. F15b *3/00*

U.S. Cl. 60—51 **9 Claims**



A method for producing high hydraulic pressures for rapidly moving press pistons using a pressure transducer, for example, a piston of two distinct diameters moving in associated cylinders, comprises storing gas at high pressure in a storage container and feeding the high pressure gas to the pressure transducer during the operation thereof. The primary or large diameter part of the transducer is connected to a gas chamber under high pressure. The gas chamber is supplied with the gas at high pressure by a separate pump. The transmission ratio of the gas pressure to the liquid pressure in a pressure transducer varies between (1 to 2 and 1 to 5) 1:2 and 1:5. The apparatus includes an arrangement in which there is a second pressure transducer which is connected to the first transducer for effecting the return stroke thereof and which includes a secondary side which is in communication with the secondary side of the first transducer during the forward stroke thereof. During the return stroke, the secondary side of the second transducer is fed, for example, from an air vessel under pressure while the primary side is in communication with a high level pressure storage tank.

3,732,692

ENERGY BEAM GENERATOR

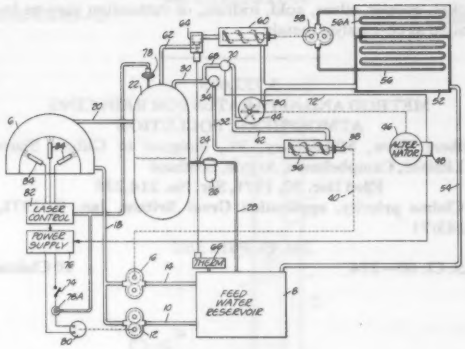
Harold E. Norell, 9230 B Virginia Avenue, South Gate, Calif.

Filed Feb. 5, 1971, Ser. No. 113,004

Int. Cl. F01d *13/02*; **F01k** *21/00*

U.S. Cl. 60—70 **2 Claims**

A power plant, particularly adaptable for vehicles including a closed recirculatory system for a liquid such as water, convertible to a heated pressurized vapor, such as steam, wherein the liquid is vaporized by a light beam heat generator, such as a group of lasers or masers, which are directed against a



vaporizing chamber to produce steam without contaminating the atmosphere with products of combustion which result from the burning of fuels, such as gases and liquids.

3,732,693

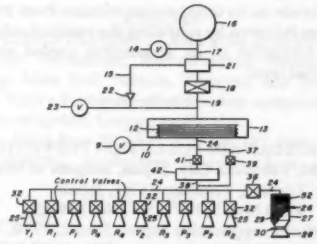
CONTROLLABLE SOLID PROPULSION SYSTEM

Ju Chin Chu, Post Office Box 3497, Orange, Calif.

Continuation-in-part of Ser. No. 677,920, Oct. 25, 1967, abandoned. This application Nov. 27, 1970, Ser. No. 93,359

Int. Cl. F02k *9/04*

U.S. Cl. 60—207 **15 Claims**



A controllable solid propulsion system for aero-space vehicles, comprising a fuel in gel form contained in a collapsible bellows within a pressurizable fuel tank of small length-to-diameter ratio, means to pressurize the fuel tank and to force the fuel gel into the thrust chamber of a rocket motor containing a packed bed of granulated solid oxidizer. Reaction of the fuel gel and oxidizer provides propulsive reaction gases. The gel may be catalytically decomposed to gaseous reaction products for reaction with the oxidizer to provide increased thrust.

3,732,694

METHOD FOR THE CATALYTIC DECOMPOSITION OF MONOPROPELLANT HYDRAZINE

Jack L. Blumenthal, Los Angeles, and Eugene D. Guth, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 18, 1968, Ser. No. 698,846

Int. Cl. C06d *5/04*, *5/10*

U.S. Cl. 60—218 **6 Claims**

This invention relates to a low cost spontaneous decomposition catalyst for hydrazine or mixtures containing hydrazine

hydrazine nitrate propellant fuels, which permits a low temperature ignition of the fuels and retains its activity after exposure to the propellant flame environment. The catalyst is produced by coating rhenium metal or a rhenium-molybdenum mixture on a support body such as alumina. Iron, nickel, copper, silver, gold, iridium, or ruthenium may be included as co-catalyst metals.

3,732,695

METHOD AND APPARATUS FOR REDUCING ATMOSPHERIC POLLUTION

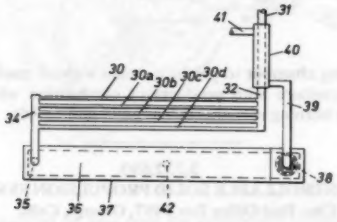
Gilbert Shaw, Middlebury, Vt., assignor to Gilbert Shaw Limited, Campbeltown, Argyle, Scotland

Filed Dec. 30, 1971, Ser. No. 214,235

Claims priority, application Great Britain, Jan. 9, 1971, 1,143/71

Int. Cl. F01n *3/02*

U.S. Cl. 60—274 **10 Claims**



A process and apparatus for purifying the exhaust gases from an internal combustion engine wherein the exhaust gases are cooled through convection alone by means of ambient air in order to separate water of combustion and pollutants dispersed therein as an unseparated mixture from the residual exhaust gases followed by reheating the residual exhaust gases to prevent formation of an undesirable cooled exhaust gas blanket at road level.

3,732,696

VEHICULAR AIR-POLLUTION PREVENTIVE

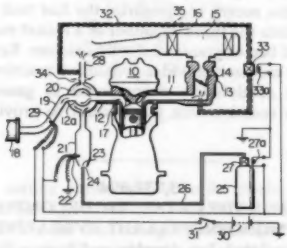
Kenji Masaki, Yokosuka City, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 5, 1971, Ser. No. 140,456

Claims priority, application Japan, June 2, 1970, 45/46866; Nov. 24, 1970, 45/102661; Nov. 24, 1970, 45/12662

Int. Cl. F02b *75/10*; **F02m** *31/06*

U.S. Cl. 60—274 **28 Claims**



Herein disclosed are arrangements for use in reducing concentrations of unburned hydrocarbons and carbon-monoxides contained in the exhaust gases from gasoline-powered internal combustion engines for motor vehicles especially during engine warm-up operation in which the unburned hydrocarbons and carbon-monoxides are emitted in high concentrations due to the low temperatures of the engine exhaust gases and the engine cooling medium. Such arrangements are adapted to heat the engine exhaust gases when the exhaust gases and/or the cooling medium are maintained at temperatures lower than a predetermined level. The arrangements may be such that not only the engine exhaust gases but the engine cooling medium is heated concurrently yet independently, wherein only the exhaust gases may be heated if the temperature of the exhaust gases decreases under the predetermined level. Means may also be provided in combination with these arrangements so as to forcedly supply fresh air into the exhaust system for assisting in the re-combustion of the exhaust gases therein.

3,732,697

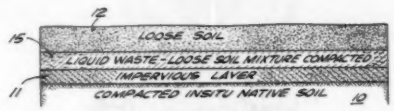
WASTE DISPOSAL METHOD AND FACILITY

Rufus F. Dickson, 525 Arbolado Drive, Fullerton, Calif.

Continuation-in-part of Ser. No. 120,498, March 3, 1971, abandoned. This application Jan. 14, 1972, Ser. No. 217,737

Int. Cl. E02d *15/00*

U.S. Cl. 61—35 **11 Claims**



The present invention relates to a waste disposal method and to a waste disposal facility.

3,732,698

METHOD FOR STABILIZING SOILS AND ABATING ACTIVE SLIDES

Harpal S. Arora, Daly City, Calif., assignor to Edward D. Graf, Daly City, Calif.

Filed May 5, 1971, Ser. No. 140,624

Int. Cl. E01c *11/24*; **E02d** *3/12, 3/14*

U.S. Cl. 61—36 R **14 Claims**

Stabilization of soil masses and abatement of active slides are accomplished by applying an aqueous solution, slurry or powder, of a chemical agent to the soil. The chemical agent is selected from ammonium, and mono, di, and trivalent metal salts of carboxylic acids, usually dicarboxylic acids of from two to six carbon atoms; ammonium and mono, di, and trivalent metal fluorides and polyfluorides; ammonium and mono, di, and trivalent metal fluoborates, fluosilicates and fluorophosphates; ammonium and alkali metal salts of phosphoric and polyphosphoric acids; sulfate salts of mono, di, and trivalent metals; cupric chloride; stannic (IV) chloride; and borate salts of metals.

3,732,699

MINE ROOF SUPPORTS

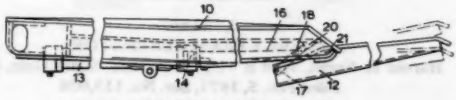
James Gray Stevenson, Wigan, England, assignor to Gullick Dobson Limited, Wigan, England

Filed Nov. 23, 1971, Ser. No. 201,444

Claims priority, application Great Britain, Dec. 2, 1970, 57,178/70

Int. Cl. E21d *17/02*

U.S. Cl. 61—45 D **5 Claims**



The invention is for a mine roof support comprising a roof engaging structure or canopy mounted on hydraulic prop

means and having an extension bar which can be advanced and set to the roof, following the passage of a mineral mining machine along the mineral face, so as to provide immediate roof support over the face conveyor and/or adjacent the coal face. A hydraulic ram for advancing the extension bar is connected to said bar by a lever device having a part which engages an abutment on the roof engaging member or canopy, at a predetermined amount of extension of the extension bar, so as automatically to cause the extension bar to tilt or move upwardly and be set against the roof by said advancing ram.

3,732,700

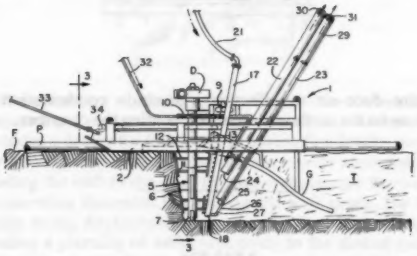
UNDERWATER PIPELINE AND CABLE TRENCHING APPARATUS

Robert P. Lynch, 5606 Farmwood Court, Alexandria, Va.

Filed Aug. 19, 1971, Ser. No. 173,161

Int. Cl. E02f *5/08*, *16/1*

U.S. Cl. 61—72.4 **14 Claims**



An underwater trenching apparatus includes a bottom-riding frame assembly provided with a rotary cutter member carried thereby. A plurality of vertical and horizontal rollers support and guide a pipeline above and adjacent to the cutting elements of the cutter member during advancement to the apparatus. Movable means are included to permit displacement of at least one of said rollers to allow lateral insertion or removal of the pipeline from within the confines of the plurality of rollers after the frame assembly is disposed upon the ocean floor in a straddling manner over the pipeline.

3,732,701

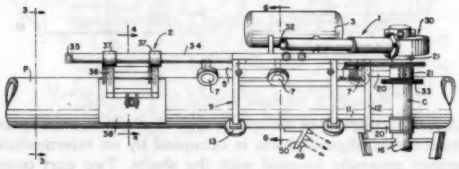
UNDERWATER PIPELINE TRENCHING APPARATUS

Robert P. Lynch, 5606 Farmwood Court, Alexandria, Va.

Filed Aug. 19, 1971, Ser. No. 173,160

Int. Cl. E02f *5/02*, *1/00*

U.S. Cl. 61—72.4 **11 Claims**



A pipeline trenching apparatus includes a carriage adapted to travel along the periphery of the pipeline. Rotary cutter drums advance with the carriage and are mounted upon frame elements pivotally attached to the carriage. Advancement of the apparatus is achieved by a reciprocating propulsion section connected to the carriage and provided with clamping elements alternately engaging and releasing the pipeline as the propulsion section is extended and retracted.

3,732,702

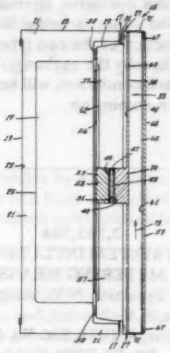
COOLING COSMETIC CABINETS FOR BATHROOM

Kurt M. Desch, Adalbert Stifterstr. 3, Traunstein, Germany

Filed Dec. 22, 1969, Ser. No. 887,078

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **5 Claims**



A cosmetic cabinet incorporating a Peltier cooling unit in the door thereof, the cooling unit removing heat from the interior of the cabinet and dissipating heat by means of a finned heat dissipator arrangement having a plurality of elongated vertically disposed cooling fins, the cabinet also incorporating a mirror at the outer surface of the cabinet's door, the rear surface of the mirror being adjacent the cooling fins whereby the mirror absorbs a portion of the heat dissipated by the cooling fins and prevents fogging of the mirror's outer surface.

3,732,703

AIR CONDITIONING PLANT FOR BUILDINGS

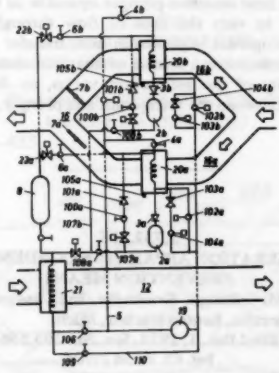
Lars Vilhelm Nordstrom; Anders Johan Nilsson, both of Goteborg; Mats Erik Nilsson, Vasteras, and Sven Roland Persson, Vastra Frolunda, all of Sweden, assignors to Rinipa AB, Karnvedsgatan, Gotesborg, Sweden

Filed June 28, 1971, Ser. No. 157,319

Claims priority, application Sweden, June 29, 1970, 8937/70

Int. Cl. F25b *13/00*

U.S. Cl. 62—324 **6 Claims**



An air conditioning plant for a building basically contains one conduit for admitting air to the building and a further conduit for evacuating air therefrom. The heat applied to the in-

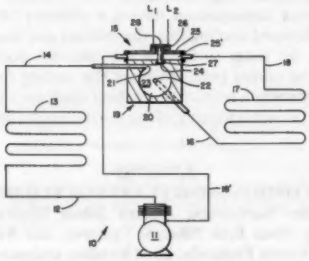
coming air largely remains in the out-going air, or may even on occasion have been increased. This heat content may be tranferred back to the inlet air conduit by means of a heat pump having at least one heat exchanger in each conduit. A major problem in an installation of that type is the need for defrosting the evaporating heat exchangers in the exhaust conduit. This problem is solved by providing two heat exchanges in parallel in the exhaust conduit and arranged in such a manner that they will become operative alternately, one serving as evaporator, while the other is being defrosted. By suitable connections, the function of the two types of heat exchangers may be switched, whereby the exchanger in the inlet conduit, instead of working as a condensor, will serve as an evaporator, thereby to cool the in-coming air.

3,732,704

REFRIGERATION SYSTEM INCLUDING REFRIGERANT METERING MEANS

Robert D. Morgan, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,573
Int. Cl. F25b *41/04*
U.S. Cl. 62—202 **3 Claims**



A refrigeration system including a refrigerant expansion or metering device. The system includes a compressor, a first heat exchanger and a second heat exchanger, the metering device being disposed between the first and second heat exchangers. The device includes a vortex chamber through which refrigerant is passed. Disposed within the vortex chamber is a heat sensitive plunger operable to vary the path of flow and to vary the rate of flow through the vortex chamber. Refrigerant is passed in heat transfer relation with the plunger which has a source of heat associated therewith. As the quality of the refrigerant varies, so does the heat transfer rate between the refrigerant and plunger.

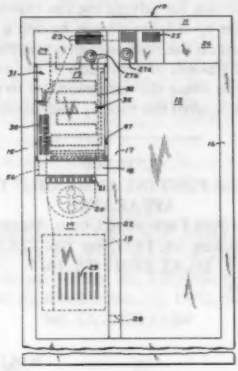
3,732,705

REFRIGERATION APPARATUS CONDENSATION PREVENTION MEANS

Wilfred W. McCullough, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 1, 1971, Ser. No. 203,556
Int. Cl. F25d *21/06*
U.S. Cl. 62—275 **10 Claims**

A refrigeration apparatus having wall means defining a chamber to be refrigerated. The chamber is refrigerated at least at times to an above-freezing temperature. A duct for conducting low temperature air is spaced adjacent the wall means of the chamber externally thereof and means are provided for preventing chilling of the wall means by the low temperature duct air to effectively preclude condensation of moisture on the surface thereof confronting the chamber.

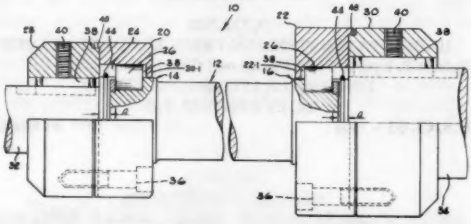


3,732,706

ROTARY COUPLING

Reginald Evans, 20 13th Avenue, Edenvale, Transvaal Province, Republic of South Africa

Filed July 14, 1971, Ser. No. 162,539
Claims priority, application Republic of South Africa, July 20, 1970, 704971
Int. Cl. F16d *3/50*
U.S. Cl. 64—31 **9 Claims**



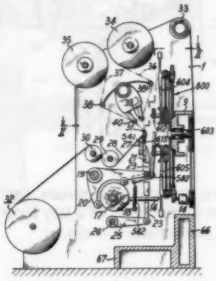
A rotary coupling of the spacer type in which an axial space between two aligned shafts is occupied by an intermediate member generally co-axial with the shafts. Two part outer rings surround the ends of the intermediate member, one part of each ring and the ends being formed with facing recesses which together define cavities in which captive driving elements are located. The other parts of the outer rings are releasably secured to the shafts and when the ring parts are released from one another the recessed ring parts can be moved towards one another over the intermediate member to enable the recessed ring parts and the intermediate member to be removed. The driving elements can be cylindrical and of self lubricating material.

3,732,707

WEFT SUPPLYING DEVICE FOR A WARP KNITTING MACHINE

Stefan Furst, Moenchengladbach, Germany, assignor to Walter Reiners, Monchemgladbach, Germany

Filed Oct. 30, 1969, Ser. No. 872,705
Claims priority, application Germany, Nov. 2, 1968, P 18 06 505.9
Int. Cl. D04b 23/12
U.S. Cl. 66—84 5 Claims



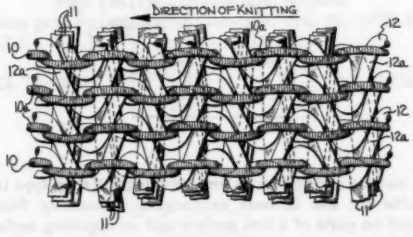
Warp knitting machine having a zone wherein needles are disposed and means for supplying warp threads to the needles includes a device for filling a weft having first holder members for making the weft ready outside the needle zone, means for guiding the weft to the warp threads comprising a thread guide cooperating therewith for making the weft ready, the thread guide being displaceable in a closed travel path, means for feeding a plurality of wefts selectively to the thread guide for entrainment thereby in the closed travel path thereof, the thread guide having a clamping member for individually gripping the thread for each weft, second holder means located adjacent the travel path of the thread guide and adapted to receive from the latter the weft gripped by the clamping member, and a severing member coordinated with the first holder members for cutting into predetermined lengths the weft to be made ready, the severing member being connected to the displacement thread guide.

3,732,708

KNIT PILE CARPET FABRIC

James E. Troy, Eden, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed July 21, 1971, Ser. No. 164,526
Int. Cl. D04b 9/14, 21/02, 23/08
U.S. Cl. 66—191 4 Claims



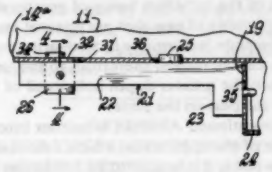
A warp knit pile fabric and method of making the same wherein a base fabric is formed from spaced rows of warpwise extending chain stitches interconnected by laid in weft yarns, and through which chain stitches pile yarns are looped in overlying relation to the laid in weft yarns. Ribbon-like strands of plastic film material are utilized for forming the weft yarns and/or the chain stitch yarns, with all such ribbon-like strands being provided by slitting respective sheets of plastic material concurrently with the knitting operation.

3,732,709

LOCK MEANS FOR RELATIVELY SLIDABLE CLOSURES

Clarence H. Kneebone, 945 Wayne Avenue, Deerfield, Ill.

Filed Jan. 20, 1971, Ser. No. 107,952
Int. Cl. E05b 65/08
U.S. Cl. 70—90 10 Claims



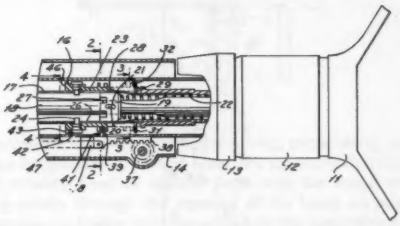
Lock means for slidable by-pass closures, such as doors and windows, comprised of a body adapted to be locked onto one of said closures in position to be abutted by the other closure.

3,732,710

LOCKABLE STEERING COLUMN ASSEMBLY

Alex Rhodes, Detroit, and James Rose, St. Clair Shores, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 25, 1971, Ser. No. 156,782
Int. Cl. B60r 25/04; E05b 65/12
U.S. Cl. 70—239 9 Claims



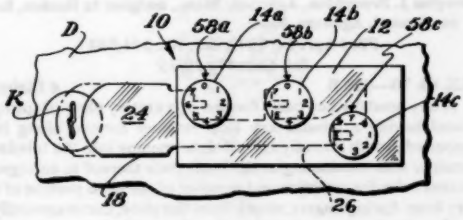
A lockable steering column assembly for an automotive vehicle including a steering shaft, a shift tube positioned about the steering shaft and an outer tube secured to the body of the vehicle enclosing the shift tube. The lock means includes a slotted collar rotatable with the steering shaft and a sleeve rotatable with the shift selector tube. The sleeve is engagable with the slotted collar and with the fixed outer tube to lock the assembly and to prevent normal operation of the vehicle.

3,732,711

KEYHOLE COVER LOCK

Martin Albert, 3260 Coney Island Avenue, Brighton Beach, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,272
Int. Cl. E05b 13/00, 37/12
U.S. Cl. 70—425 10 Claims



A lockable cover for a keyhole is provided. The keyhole cover includes a housing that is secured to the outside surface

of the door adjacent the lock thereof. A plate that is slidably received in the housing is movable between covering and uncovering positions with respect to the keyhole. A plurality of tumblers are journaled in the housing with each of the tumblers being provided with a plurality of radially extending holes in the body portion thereof. All of the holes in the tumblers except one are relatively shallow in depth, the remaining hole in each of the tumblers being of greater depth sufficient to receive a plurality of pins that are integral and movable with the plate. The plate is normally in a covering position over the keyhole and can be moved therefrom to the uncovering position only when the greater depth hole in all of the tumblers is aligned with the pins on the plate.

The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims nor is it intended to be limiting as to the scope of the invention in any way.

3,732,712

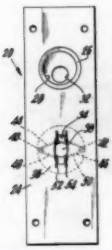
DOOR LOCK CYLINDER PLATE

Allan Miller, 5 Shaw Lane, Irvington, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,170

Int. Cl. E05b *9/08*

U.S. Cl. 70—452 **4 Claims**



A guard plate for a cylinder lock or the like includes a base and a mesa portion extending from the base and having an opening formed therein. When the plate is installed over the lock, that opening is in alignment with the axial end of the lock and the mesa portion prevents that axial end of the lock from being grasped and wrenched open, while permitting access to the lock for key operation through the opening. The guard plate further includes a second opening spaced relative to the first opening to permit the passage therethrough of a door handle. The openings are movable with respect to one another to permit the guard plate to be used on doors having different arrangements of the lock and door handle.

3,732,713

INTEGRAL KEY PLATE FOR KEY CASES

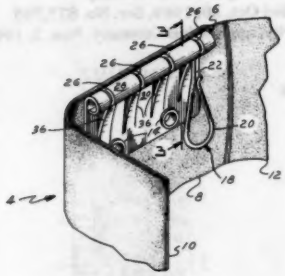
Douglas J. Broughton, Agawam, Mass., assignor to Buxton, Incorporated, Agawam, Mass.

Filed Apr. 14, 1972, Ser. No. 244,033

Int. Cl. A47g *29/10*

U.S. Cl. 70—456 B **4 Claims**

A key head for key cases formed of a unitary plate of spring metal having a tubular key loop retainer formed along its upper edge with laterally spaced slots opening into the tubular retainer and terminating at the inner ends thereof in enlarged access holes for insertion and removal of the head portion of a key loop. Spring fingers, struck from the plate, curve upwardly uniformly about a predetermined radium with their outer ends of a step configuration extending into the tubular retainer through said access holes. Each step portion blocks the insertion and removal of key loops from the key head and is disposed to hold the major portion of the head above said access holes serving as actuating means for the deflection of each spring finger by the head of a key loop for removal from the key head and reinsertion therein.



3,732,714

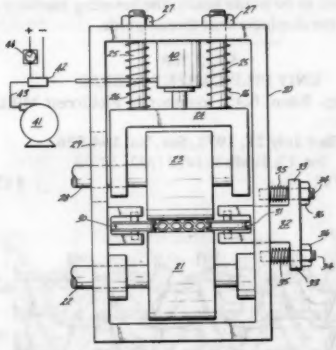
METHOD AND APPARATUS FOR DEFORMING A FLAT ON PARTS OF METAL STRIP-TYPE TUBING WHILE LEAVING OTHER PARTS UNDEFORMED

Lester J. Tranel, St. Louis, Mo., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 119,600, March 1, 1971, Pat. No. 3,712,372. This application May 4, 1972, Ser. No. 250,229

Int. Cl. B21h *8/00*

U.S. Cl. 72—194 **10 Claims**

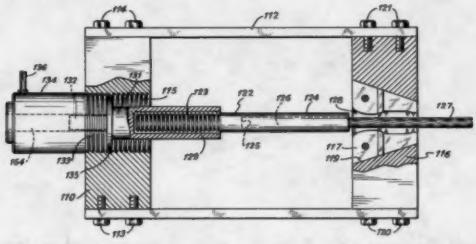


A method and apparatus for forming metal strip-type tubing suitable for use in heat exchangers. Deforming flats are formed on parts of a first surface and an opposing surface of the tubular passageways in the strip-type tubing while other parts of the tubing are left undeformed. The deformed flats are adapted to be bonded to flat type fin stock for heat exchange applications. The undeformed areas of the tubing are adapted to be bent without a significant pressure drop occurring in the bend area. The apparatus includes means for deforming the flat on the tubular passageways while restraining the edges of the strip-type tubing and further includes means for sequentially engaging and disengaging the deforming means from contact with the tubing.

3,732,715
APPARATUS FOR PRESSING CONNECTOR MEMBERS ON STRUCTURAL ELEMENTS

Luis Ramirez Zamorano, San Borja 1358, Mexico City, Mexico

Filed July 22, 1970, Ser. No. 57,156
Claims priority, application Mexico, Mar. 4, 1970, 117,734
Int. Cl. B21c 23/00
U.S. Cl. 72—253 7 Claims



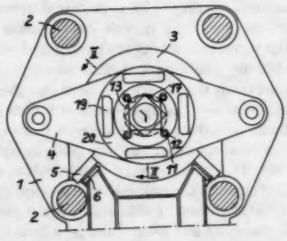
An extrusion die assembly having a composite extruding bore comprising a flared entrance section with a radius of curvature of approximately 0.2 times the diameter of the extrusion bore, a first conical extruding section which wall forms an angle about the axis of preferably 12°, a second conical extruding section with its wall forming an angle of preferably 6° about the axis, a third cylindrical extruding section with its wall forming an angle of 0° about the axis, an expanded section of a diameter substantially larger than the extruded diameter of the connector member, and a cylindrical guiding outlet section having a diameter slightly larger than the diameter of said cylindrical extruding section.

An apparatus for extrusion pressing connector members on structural members, which comprises a pair of dies as described above, a hydraulic cylinder and piston assembly, a pushing member attached to said piston, means for removably maintaining said dies in its operative position, and means for removing said dies from its operative position to a mutually spaced position to enable the removal of the extruded assembly.

3,732,716
SECURING AN EXTRUSION PRESS RAM TO A THRUST MEMBER

Helmut Robra, Mulheim/Ruhr, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 19, 1971, Ser. No. 116,878
Claims priority, application Germany, Feb. 20, 1970, P 70 06 133.5
Int. Cl. B21c 25/00
U.S. Cl. 72—273 11 Claims

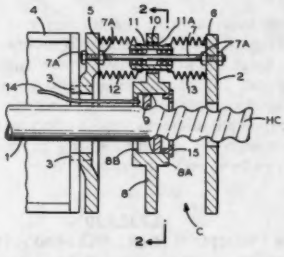


It is known to retain a conical shoulder on the rear end of an extrusion press ram to a thrust member such as a cross-head by means of a retaining ring which has a conical recess in its rear face corresponding to a ram shoulder, the retaining ring being tightened towards the thrust member in some suitable manner. I now provide a generally square rear end on the ram shoulder and give the retaining member a generally square opening for receiving the ram shoulder, so that the ram can be secured to the thrust member by inserting the rear end portion of the shoulder through the opening and turning the ram through about 45° before tightening the retaining member towards the thrust member.

3,732,717
APPARATUS FOR THE PRODUCTION OF HELICALLY CORRUGATED METAL TUBING

Dieter Ahlvers, Mellendorf, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte, Hannover, Germany

Filed Oct. 1, 1971, Ser. No. 185,637
Claims priority, application Germany, Oct. 7, 1970, P 20 49 235.7
Int. Cl. B21b 13/20
U.S. Cl. 72—77 6 Claims



Apparatus for corrugating metal tubing, particularly tubing having a longitudinally welded seam; the apparatus including a driven rotating head of annular form with the metal tubing passing axially through the opening of the head, an annular corrugating die holder being mounted on the head with a corrugating die mounted on the holder; the holder being arranged for axial movement as well as rotary movement whereby to compensate for irregularities in the metal of the tubing or in the welded seam thereof, as well as variations in the hardness of the metal of the tubing, to thereby insure the formation of helical corrugations in the tubing of precise uniformity in dimensions.

3,732,718
CABLE CRIMPING DIE TOOL

Louis Barberio, Bronx, and Americo Cornacchio, Mount Vernon, both of N.Y., assignors to Kings Electronics Co., Inc., Tuckahoe, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,123
Int. Cl. B21d 9/08
U.S. Cl. 72—410 2 Claims

A cable crimping die tool is provided in which the split halves of the die are adapted to be moved together to perform

a crimping operation. One or more bores are provided in one of the halves of the die, and corresponding pins are provided in the other adapted to engage the bores to insure proper alignment of both portions of the die during a crimping operation.

3,732,719

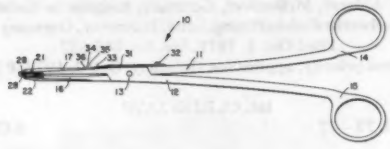
BOX-LOCK SPANNER SPRING

Joseph Peter Pallotta, Brooklyn, N.Y., assignor to Edward Weck & Company, Inc., Long Island City, N.Y.

Filed Dec. 24, 1970, Ser. No. 101,207

Int. Cl. B21d *9/08*

U.S. Cl. 72—410 **7 Claims**



A surgical instrument of the forceps type having an improved biasing means. A leaf spring is mounted so as to span the forceps hinge and urge the jaws toward either an open or a closed position. The biasing means also governs the precise amount of opening normally permitted between the applicator jaws. A second embodiment employs a second spring acting in combination with the spanning spring to maintain the jaws normally open by a predetermined distance.

3,732,720

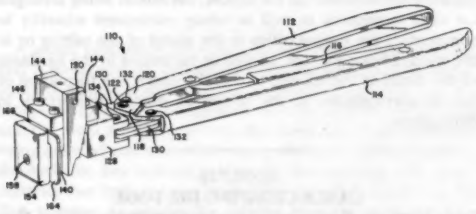
TOOL FOR CRIMPING JOINT FASTENERS OR THE LIKE

Harold Edwin Cootes, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 25, 1971, Ser. No. 127,896

Int. Cl. B21d *9/08*

U.S. Cl. 72—410 **7 Claims**



Crimping tool, for crimping joint fasteners for cabinet joints comprising a fixed pair having a supporting anvil thereon and a movable jaw on which crimping die surfaces are provided for crimping a structural member to a fastener. The anvil has a recess therein which is adapted to receive a projection on the fastener so that the crimping die surfaces on the movable jaw will engage the structural member at a precisely predetermined locations relative to the fastener member to which the structural member is being crimped.

3,732,721

PORTABLE APPARATUS FOR FORMING BENDS IN CONCRETE REINFORCING RODS

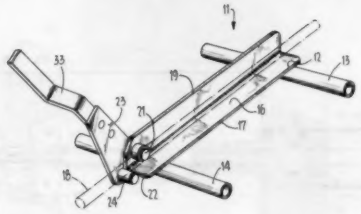
Matt Cusimano, San Jose, Calif., assignor to Cusimano Tool Development Corp., San Jose, Calif.

Filed June 23, 1971, Ser. No. 155,812

Int. Cl. B21j *13/08*

U.S. Cl. 72—458 **9 Claims**

Lightweight apparatus for forming bends in concrete reinforcing rods at a construction site is described. The inner surface of one of the legs of an elongated angle iron provides a platform for supporting a rod to be bent, and a first stud around which the rod is bent projects over the platform from the other leg adjacent an end of the angle iron. A lever plate is mounted on the exterior side of the second leg for pivotal motion about the axis of the first stud. A second stud projects from a location on the lever plate providing orbiting of the same around the first stud on pivotal motion of the lever plate to bend any rod between such studs around the first stud. The lever plate has an elongated handle attached to it to facilitate pivotal motion thereof by hand.



3,732,722

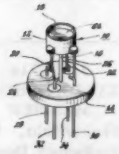
MATERIAL HOLDER

Stanley D. Norem, Bayside, N.Y.; Michael J. O'Neill, West Redding, and Robert S. Richmond, Westport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 20, 1971, Ser. No. 173,465

Int. Cl. G01n *25/00*

U.S. Cl. 73—15 B **12 Claims**

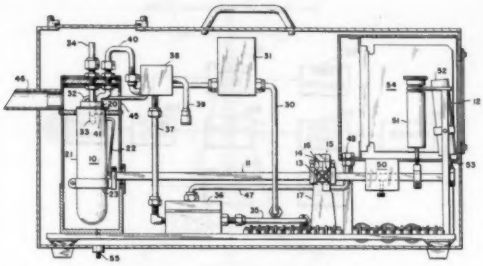


A material holder for a differential scanning calorimeter includes a heater element and a sensor element, both selected to exhibit substantially the same predetermined thermal coefficient of expansion. A cylindrical member for housing the heater and sensor elements is also selected to exhibit substantially the same thermal coefficient of expansion as well as to provide structural rigidity. The cylindrical member is formed from one of the precious metals or an alloy thereof. The heater and the sensor elements are positioned within the cylindrical member by components that electrically isolate the heater element from the sensor element but thermally couple the two together, as well as by components that electrically insulate the heater and the sensor elements from each other and from the cylindrical member but thermally couple the two elements together. The positioning components are also selected to exhibit substantially the same thermal coefficient of expansion as the predetermined coefficient. Thus a plurality of components and elements are assembled in a housing so as to expand and contract substantially coextensively without rupturing. The differential scanning calorimeter may therefore be operated reliably at high temperatures.

3,732,723
APPARATUS FOR DETERMINING DISTILLATION CUT POINTS

Alvin D. Goolsby, Moraga, and Benjiman D. Stanton, Walnut Creek, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,534
Int. Cl. G01n *25/08*
U.S. Cl. 73—17 A 5 Claims

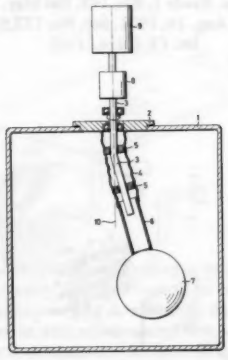


An apparatus for automatically performing distillation analysis of liquids wherein a sample of the liquid is vaporized while the temperature of the vapor and the weight of the sample are continuously measured and recorded. The data is supplied to a computer programmed to provide preset percent distillation points for the sample and hold circuits that can be set to trigger at any preselected boiling point or cut point.

3,732,724
OPERATIONAL VISCOSIMETER

Werner Heinz, 72 Dabringhauserstrasse, Cologne-Dellbruck, Germany

Filed Feb. 1, 1971, Ser. No. 113,879
Int. Cl. G01n *11/10*
U.S. Cl. 73—59 3 Claims

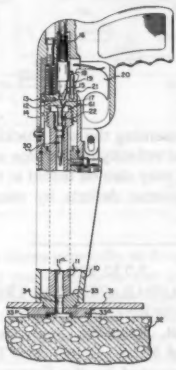


A viscosimeter of the type employed for measuring the viscosity of dough, semi-liquid artificial resins, paints, lubricating oils and lacquers is disclosed. The viscosimeter includes a chamber capable of being sealed to retain fluid under pressure. A drive shaft extends through an opening in one wall of the chamber. The shaft is bent at an acute angle at a distance spaced inwardly from the wall of the chamber. A tubular extension connects the shaft with a ball or paddle, or other measuring surface, which is rotated by the shaft. A flexible sleeve of substantially the same diameter as the tube extends between the end of the tube and the interior surface of the wall surrounding the shaft, thereby forming an effective rotary seal.

3,732,725
METHOD AND APPARATUS FOR TESTING COMPRESSIVE STRENGTH OF CONCRETE AND THE LIKE

Fred W. Allen, Jr., Glastonbury; Rowland J. Kopf, Kenmore Apt. 3B, Lanning St., Southington, and Royal W. Thompson, Glastonbury, all of Conn., assignors to said Kopf, by said Allen and Thompson

Continuation of Ser. No. 834,945, June 20, 1969, abandoned, which is a continuation-in-part of Ser. No. 669,417, Sept. 21, 1967, abandoned. This application Feb. 18, 1971, Ser. No. 116,676
Int. Cl. G01n *3/42*
U.S. Cl. 73—81 11 Claims



The mechanical probing of conglomeritic materials such as concrete for the determination of compressive strength involves the driving of one or more probes into the subsurface of the material under controlled conditions, to a depth below the shear cone inherent in the form of tension failure resulting from internal stresses caused by the probe penetration, and measuring the probe penetration which can be calibrated as reflective of the subsurface compaction and expressed in pounds per square inch compressive strength. Said probe penetration breaks the coarse ingredients of the conglomerate mass and rearranges the subsurface material into a compression stressed bulb. For more exact results the hardness of the coarse ingredients, in the form of the Moh's Scale rating is factored into the calibration process. Surface hardness and/or condition is unrelated to the resultant compaction bulb of the conglomerate mass and is disregarded. Preferably, three triangularly spaced probes are used for greater accuracy and measuring is done in such a way as to get a mechanical average of the penetration of the three probes and a coefficient of variation indication. For a given set of tests, and for most accurate results, all conditions are accurately controlled such as dimensions and hardness of the probe, the force effective to drive the probe including the powder charge, distance from the cartridge to a separable probe driving head, and clearance between the driving head and the bore, and uniform diameter of the probe driving head and the gun barrel bore.

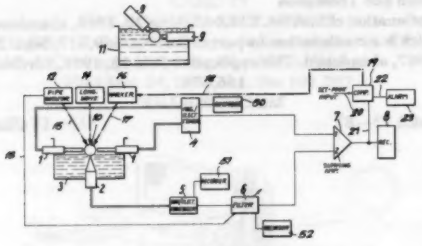
3,732,726
METHOD OF AND APPARATUS FOR DETERMINING THE INTERNAL DIAMETER OF PIPES

Franz Ferber, Dusseldorf, Germany, assignor to Vereinigte Duetsche Metallwerke, Frankfurt am Main-Heddernheim, Germany

Filed Dec. 4, 1970, Ser. No. 95,056
Claims priority, application Germany, Dec. 4, 1969, P 19 60 925.7
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.5 R 11 Claims

A method of and an apparatus for measuring the internal diameter of a pipe in which two inductive displacement

pickups detect the external diameter of the pipe and an ultrasonic resonance system is employed for detecting the wall thickness, the pipe being axially shifted through the apparatus and being rotated about its axis concurrently. Periodic variation of the signal representing the wall thickness at a frequency equal to the angular velocity of the pipe are suppressed by filter means. The pipe may also be tested at the same time for longitudinal and transverse defects by means of ultrasonic waves.



3,732,727

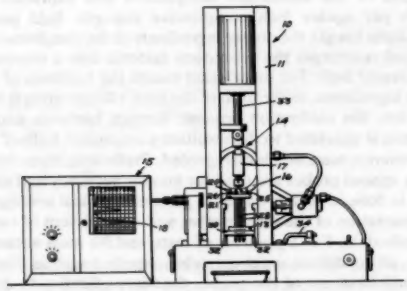
METHOD AND APPARATUS FOR TESTING THE TENDERNESS OF MEAT

Larry C. Hinnergardt, Franklin, and Justin M. Tuomy, Framingham, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 34,288, May 4, 1970, abandoned. This application Dec. 7, 1971, Ser. No. 205,736

Int. Cl. G01n *3/42, 33/12*

U.S. Cl. 73—81 **6 Claims**



A method for testing the tenderness of a slice of meat comprising supporting the slice of meat in a horizontal plane, piercing the slice of meat with a plurality of semi-blunt needle-like piercing means, detecting the maximum force required for piercing the slice of meat, and recording the maximum piercing force on a strip chart in an electronic recorder/indicator.

Apparatus for carrying out the method including a means for driving a test member into a slice of meat, means for detecting and indicating the force applied in driving the test member into the slice of meat, the test member having a head portion comprising a plurality of semi-blunt elongated needle-like elements of small diameter and a plate-like base portion for supporting the slice of meat while the needle-like elements are being driven through the slice of meat and through holes in the plate-like base portion.

3,732,728

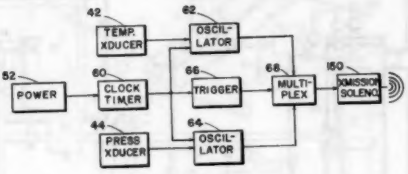
BOTTOM HOLE PRESSURE AND TEMPERATURE INDICATOR

John R. Fitzpatrick, Tulsa, Okla., assignor to Douglas Fitzpatrick, Tulsa, Okla.; William N. Dawson and Robert S. Tyler, part interest to each

Filed Jan. 4, 1971, Ser. No. 103,721

Int. Cl. G01v *11/00*

U.S. Cl. 73—151 **39 Claims**



A bottom hole indicator for determining the pressure and temperature at the bottom of a well bore, and which is particularly designed and constructed for substantially permanent bottom hole installation of the pressure and temperature sensing instrumentation utilizing existing oil well tubing as an information conductor, and the portability of the well head information collection and recording equipment for permitting frequent and economical measurements of reservoir pressure and temperature at the bottom of the well bore.

3,732,729

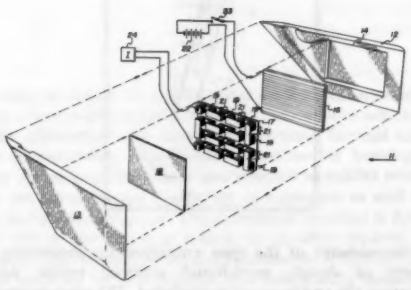
SPEED SENSOR

Norman D. Greene, Route 1, Box 148, Del Mar, Calif.

Filed Aug. 19, 1971, Ser. No. 172,997

Int. Cl. G01c *21/10*

U.S. Cl. 73—181 **3 Claims**

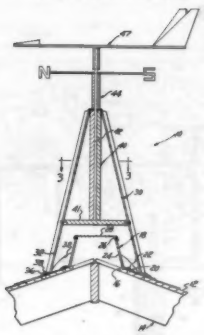


A speed sensor for mounting on the hull of a boat for sensing the water speed of the boat in which a bank of semiconductor thermal junction units are mounted in a co-planer thermopile relationship being electrically connected serially; a heating pad mounted on one surface of the co-planer thermopile; and a copper plate juxtaposed to the heating pad and the opposite side of the co-planer thermopile.

3,732,730
WEATHER VANE AND VENT ASSEMBLY

Stephen Kwolek, 8385 Woodcrest Drive, Westland, Mich.

Filed Nov. 22, 1971, Ser. No. 200,897
Int. Cl. G01p 13/02
U.S. Cl. 73—188 10 Claims

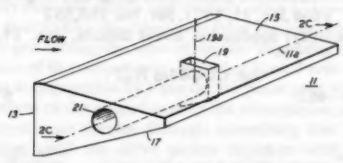


Apparatus that can be mounted over a vent opening in the roof of a building to provide ventilation and which also functions as a weather vane to indicate the direction of the wind.

3,732,731
BLUFF BODY FLOWMETER WITH INTERNAL SENSOR

Theodore John Fussell, Jr., Bound Boook, Bridgewater Township, Somerset County, N.J., assignor to Eastech, Inc., South Plainfield, N.J.

Filed Feb. 2, 1971, Ser. No. 111,829
Int. Cl. G01f 1/00; G01p 5/10
U.S. Cl. 73—194 B 12 Claims

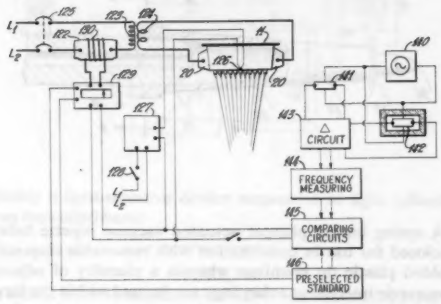


A bluff body flowmeter, including a bluff body having a planar base preferably disposed normal to fluid flow in a conduit and a pair of converging downstream surfaces, is provided in one embodiment with an elongated first aperture which extends between the downstream surfaces in the high turbulence flow zone. The longitudinal axis of the first aperture lies in a plane normal to the fluid flow and is itself normal to the transverse axis of the bluff body. In addition, the bluff body is provided with an elongated second aperture which communicates between the first aperture and the exterior of the conduit and which is adapted to receive a sensor for detecting fluid flow changes in the first aperture. In another embodiment, the bluff body base is convex in shape and the first and second apertures are located therein and the first aperture communicates with a periodic, low turbulence flow zone in order to improve signal quality. In still another embodiment, the longitudinal axis of the first aperture is disposed at an oblique angle to the transverse axis of the bluff body in order to detect vortex shedding at half its actual frequency.

3,732,732
TEMPERATURE MEASURING METHOD

William C. Trethewey, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 832,528, April 7, 1969, Pat. No. 3,582,298, which is a division of Ser. No. 591,906, Nov. 3, 1966, Pat. No. 3,467,325. This application Nov. 20, 1970, Ser. No. 91,475
Int. Cl. G01k 7/32; G05d 23/20
U.S. Cl. 73—362 R 2 Claims

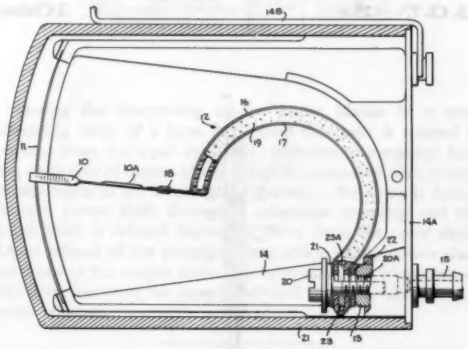


This invention relates generally to frequency measuring apparatus and more particularly to the use of such frequency measuring apparatus in condition sensing apparatus which may be utilized for sensing a variable condition and controlling the variable condition. Further, the inventive concept is particularly applicable in fiber producing apparatus.

3,732,733
DIRECT-ACTING PRESSURE AND VACUUM SENSOR

Siegfried H. A. Schmaus, Philadelphia, Pa., and Franklin G. Reick, Westwood, N.J., assignor to said Schmaus by said Reick

Continuation-in-part of Ser. No. 317, Jan. 2, 1970. This application Sept. 3, 1971, Ser. No. 177,619
Int. Cl. G01l 7/04
U.S. Cl. 73—418 9 Claims

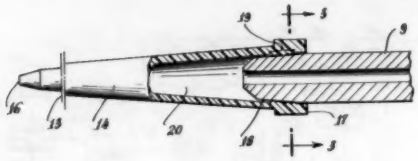


A direct-acting pressure and vacuum gauge operable in the low-pressure range and constituted by two cantilever springs having different lengths and spring rates. The two springs have similar curved formations and are maintained in spaced relation one within the other, to define a pressure region therebetween. Both springs are attached at one end to a fixed input socket, the free ends of the springs terminating in a common head from which a pointer is extended. Disposed within the pressure region and abutting the inner walls of the springs, is a flexible bladder forming an internal chamber communicating with the socket, whereby fluid fed into the chamber causes the springs to deflect as a function of fluid pressure, thereby moving the pointer to indicate pressure.

3,732,734
MICROPIPETTE WITH DISPOSABLE TIPS

Souren Avakian, Westport, Conn., assignor to Centaur Chemical Co., Danbury, Conn.

Filed May 25, 1972, Ser. No. 256,992
Int. Cl. B01l 3/02
U.S. Cl. 73—425.6 6 Claims



A spring loaded plunger actuated vacuum pipette tube is disclosed for use in combination with removable disposable molded plastic tip members wherein a plurality of adjacent concentric internal annular rings are formed within the larger open end of the tip member, and annular rings being of successively decreasing diameter progressing inwardly, for cooperative airtight frictional engagement with a smoothly tapered end surface of the pipette tube.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention. In order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawing as well as to the claims.

3,732,735
PIPETTES

Jules Barry Cohen, Brooklyn, N.Y., assignor to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

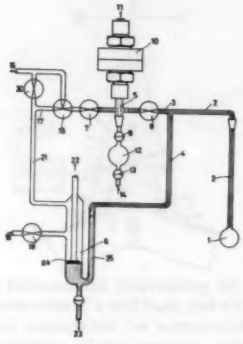
Filed June 17, 1971, Ser. No. 154,021
Int. Cl. B01l 3/02
U.S. Cl. 73—425.6 2 Claims

A manual pipette having piston slideably mounted in a hollow barrel to first displace a measured quantity of air from the barrel and then draw a like quantity of liquid into the barrel from a container of liquid being pipetted. A spring biased seal is provided around the piston so that the seal remains air tight even after the seal becomes worn from protracted use.

3,732,736
SYSTEM FOR ADSORPTION MEASUREMENT

Philemon Glaude, Groet; Walter Karcher, Alkmaar, and Robert Smets, Groet, all of Netherlands, assignors to European Atomic Energy Community (Euratom), Luxembourg

Filed Dec. 4, 1970, Ser. No. 95,316
Claims priority, application Luxembourg, Dec. 10, 1969, 59979
Int. Cl. G01n 15/08
U.S. Cl. 73—432 PS 7 Claims

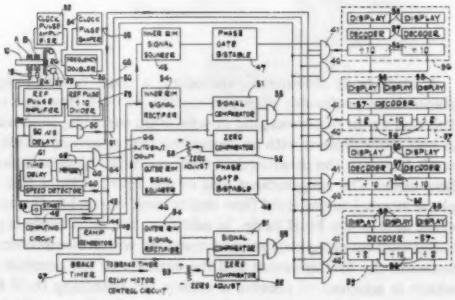


The system measures by the adsorption of gas the specific surfaces of porous or divided solids. It injects equal quantities of adsorbate in stages into a sample-carrying chamber. These equal quantities of adsorbate come from a chamber of constant volume in which, before injection into the sample-carrying chamber, the adsorbate pressure is in each case equal to the pressure of equilibrium of the adsorption of the previous injection increased by a constant value.

3,732,737
APPARATUS FOR USE IN WHEEL COUNTERBALANCING

Brian Michael Forster, Harthill, England, assignor to G.K.N. Birfield Transmissions Limited, Birmingham, England

Filed Jan. 21, 1971, Ser. No. 108,552
Claims priority, application Great Britain, Jan. 27, 1970, 3,867/70
Int. Cl. G01m 1/22
U.S. Cl. 73—462 5 Claims

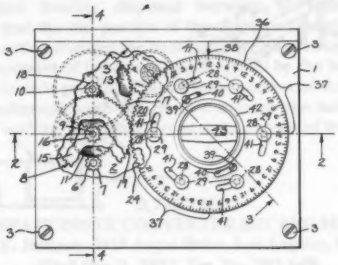


In apparatus for wheel counter-balancing a wheel to be balanced is mounted on a shaft for rotation therewith and a digital read-out is obtained for the positions and magnitudes of the weights required for balancing. Clock pulses for the digital read-out are derived from a pulse generator in driving connection with the shaft.

3,732,738
TIMER

Edward C. Grout, Deerfield, Wis., assignor to Sta-Rite Industries, Inc., Delaven, Wis.

Filed May 24, 1971, Ser. No. 146,314
Int. Cl. G05g *21/00*
U.S. Cl. 74—3.52 **10 Claims**



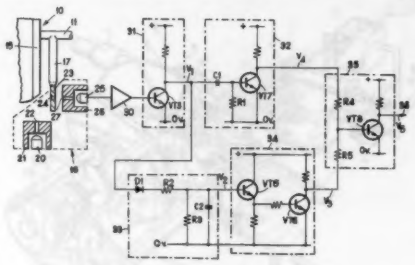
Two different gears mounted on the same axis and driven from a single power gear train to provide one gear as a slowly revolving timer with selectable pins triggering intermittent operation of the faster power output gear. The power output gear has a recess which interrupts its drive from a pinion rotated constantly by the gear train, and the triggering pin on the slow timing gear overtakes at a predetermined time setting and drives the output gear to effect re-engagement of the pinion therewith. An undercut portion of the gear recess radially beneath the portion of the gear teeth on the output gear disposed to be re-engaged by the drive pinion enables yielding of the gear teeth on the output gear to effect intermeshing of the gear teeth thereof with the gear teeth of the drive pinion in the event of conflict. The hub of the output gears extends axially through the slower timing gear and has a knob thereon for manual turning of the output gear during manual servicing, and the drive pinion is axially movable to disengage the same from the output gear during such manual servicing. The slow timer gear is spring biased axially to operative position and is manually movable axially against the spring and away from the output gear to free the timer gear from the gear train and provide for pre-setting the time of day for triggering or initiating operation of the output gear. A spring biased arm on the output gear is engageable by a pin on the timer gear to initiate re-engagement of the output gear by the drive pinion, after which the output gear rotates through something less than a full revolution until the drive pinion registers with the recess therein, and the arm pivotally yields against its spring as it engages successive pins during such rotation of the output gear by the drive pinion. In one embodiment the arm is withdrawn from the path of the pin at all times except when a predetermined fact occurs.

3,732,739
MONITORING OF GYROSCOPE ROTATION

John Russell Catford, Sittingbourne, and James Brotton, Chatham, both of England, assignors to Elliott Brothers (London) Limited, London, England

Filed July 21, 1971, Ser. No. 164,604
Claims priority, application Great Britain, July 21, 1970, 35,254/70
Int. Cl. G01c *19/28*
U.S. Cl. 74—5.6 **3 Claims**

A gyroscope system including an arrangement for monitoring the rotation of the gyroscope rotor comprising sensing means which produces an output signal corresponding to an optically coded band on the rotor. The sensing means is

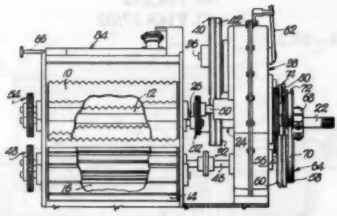


suitably a light-sensitive device responsive to light reflected from the coded band.

3,732,740
GEAR TRANSMISSION HAVING MECHANISM FOR REVERSE GRINDING

Ferol S. Fell, Newton, and William D. Long, Hesston, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Dec. 8, 1971, Ser. No. 206,028
Int. Cl. F16h *37/06*
U.S. Cl. 74—15.2 **9 Claims**



During the sharpening of the cutter blades of a crop chopping rotor of a farm implement the rotor is rotated in reverse from the input shaft of a reversible transmission having a number of output shafts operably connected with certain components of the implement. Normally, the rotor is driven from a power shaft through a releasable coupling and the input shaft is rotated through a drive from the rotor shaft. Upon release of the coupling, connection of the power shaft with one of the output shafts and reversal of the transmission, the drive between the input shaft and the rotor shaft effects rotor reversal.

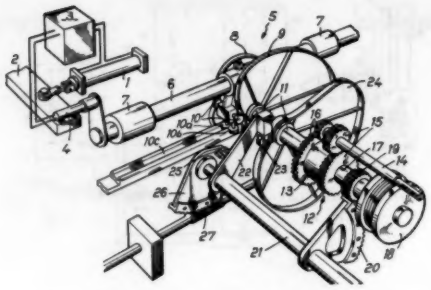
3,732,741
DEVICES FOR CONTROLLING THE CARRIAGE OF A PORTABLE SHEAR

Paul Defontenay, Bourg-la-Reine, and Ian John Lewis, Les Ulis, both of France, assignors to Societe Anonyme dite: Wean Damiron, Paris and Redex, Val de Marne, France

Filed June 2, 1971, Ser. No. 149,148
Claims priority, application France, June 5, 1970, 7020827
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 **5 Claims**

This invention relates to a device for controlling the carriage of a portable shear, wherein it is actuated by a double-action jack fed by a hydraulic assembly piloted by a gap detec-

tor between the carriage and a movement simulator composed of a movable member, the displacement of which parallel to



the carriage is controlled by a cam driven by means of a differential on which means enable the rotation of the cam to be braked or accelerated.

3,732,742

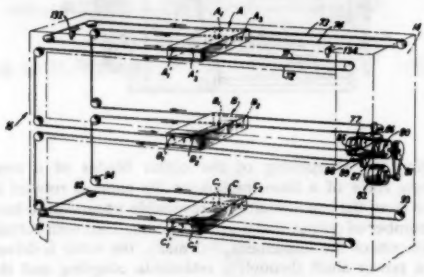
RANDOM ACCESS STORE FOR CARDS, FILE FOLDERS AND THE LIKE

John A. Castaldi, Brooklyn, N.Y., assignor to Supreme Equipment & Systems Corporation, Brooklyn, N.Y.

Division of Ser. No. 877,571, Nov. 25, 1969, Pat. No. 3,595,388, which is a continuation-in-part of Ser. No. 430,330, Feb. 4, 1965, abandoned. This application Feb. 10, 1971, Ser. No. 114,235

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.2 **3 Claims**



A random access store for cards, file folders and the like, in which the folders are stacked face-to-face. The folders are optically edge-coated and sensed simultaneously by a plurality of moving carriages, driven by a single cable, which continuously compares the sensed code to the command code and ejects the desired folder. The optical reader senses rectilinearly (along the same line as the light source) and the coded signal is automatically negated from mis-positioned folders. Folder alignment regardless of packing density is provided by magnetic clutching in cooperation with an array of folder guiding slots. Manual entry of the file folders into the store is random and may take place simultaneously with the automatic withdrawal. Towards this end, a feed-through access is provided which automatically gates and raises the magnetic clutches to permit ejection of the desired folder. Further refinements described include ejected folder collection; automatic input; a memory adjunct; and remote signalling.

3,732,743

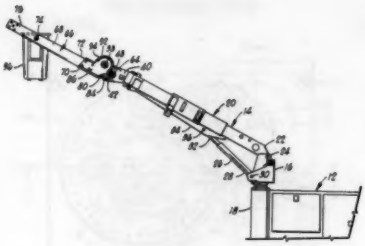
EXTENDABLE BOOM APPARATUS

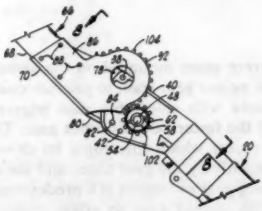
Donald R. Ballard, Route 1 Box 310A, Sapulpa, Okla.

Filed Mar. 12, 1971, Ser. No. 123,770

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.18 **11 Claims**





An extendable boom apparatus having a first boom member pivotally secured to and supported by a frame. A second boom member is pivotally secured at one end thereof to one end of the first boom member and is adapted to fold jack-knife fashion to a position parallel to the second boom member and, alternately, to an extended position in axial alignment with the second boom member. The alternate folding and extending of the apparatus is accomplished by means of a drive wheel, mounted on a transverse power driven shaft journaled in the end of the first boom member adjacent the second boom member, whose periphery is meshingly engaged with the arcuately shaped periphery of a plate fixedly secured to the second boom member. Apparatus is also disclosed which permits the drive wheel to be disengaged from the shaft so that the shaft is free to rotate within the drive wheel without imparting rotary motion thereto and thereby permitting the power driven shaft to be used for winch purposes.

3,732,744

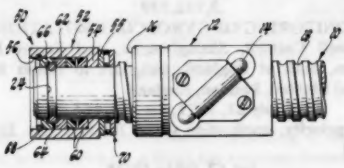
STOP FOR SCREW AND NUT ACTUATOR

Dan R. Rowland, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 15, 1972, Ser. No. 226,426

Int. Cl. F16h *1/18*

U.S. Cl. 74—424.8 R **4 Claims**



An improved stop adapted for incorporation into a screw and nut actuator assembly to non-jammingly arrest relative

axial motion between the screw and nut portions of the assembly, the stop including a cylindrical surface on the screw portion having formed therein a groove having a semicircular cross section, an annular stop ring having a circular cross section of diameter equal to the width of the groove disposed in the groove and defining a raised abutment on the screw including a shear section of maximum width at the cylindrical surface, an intermediate member disposed around the cylindrical surface inboard of the stop ring adapted for engagement on the latter generally at the shear section thereof, and an anti-friction bearing disposed between the intermediate member and the nut portion of the actuator assembly. When the nut portion engages the bearing the relative rotational motion component of the former is dissipated by the latter while an axial force is generated at the shear section of the stop ring and transferred to the nut portion through the intermediate member and the bearing to arrest axial motion of the nut portion.

3,732,745

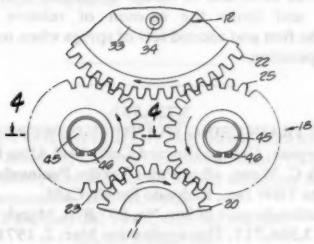
CAMSHAFT DRIVE CONVERTER KIT AND METHOD

Maurus E. Jackson, 4919 Argus Drive, Los Angeles, Calif.

Filed Dec. 1, 1971, Ser. No. 203,648

Int. Cl. F16h *3/08*; F01l *1/34*, *1/02*

U.S. Cl. 74—325 **13 Claims**



A camshaft drive converter kit and method for converting a vehicle engine camshaft from chain to gear drive without need for machining or otherwise altering the engine structure and simply by substituting kit components for chain drive components. The kit includes several idler gears having closely related but slightly different pitch diameters and one selected pair of which gears is best suited for use to interconnect the kit crankshaft and camshaft gears. Both idler gears are held assembled floatingly between the driving and driven gears and are held against axial displacement by the cover for the camshaft drive mechanism.

3,732,746

TRANSMISSION CONTROL LEVER ASSEMBLY

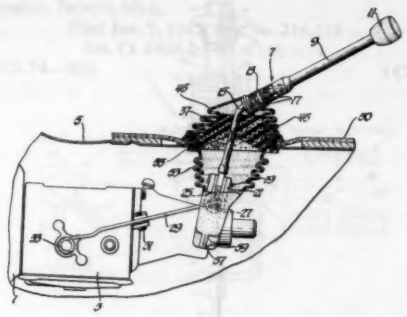
John D. Fitzpatrick, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 29, 1971, Ser. No. 167,329

Int. Cl. G05g *9/00*

U.S. Cl. 74—473 R **4 Claims**

A control lever adjustably mounted on a transmission extends through an opening formed in the floor of a vehicle and through a floor-mounted insulator closing the opening. The insulator is preferably a molded block of resilient material that lowers the intensity of any sound waves passing therethrough to the interior of the vehicle while yielding to allow all necessary control movements of the lever. The insulator yieldably grips a portion of the lever above its mounting so that vibrations imparted to the lever are damped by the flexing of the material of the insulator. Preferably the lever has parts separated by vibration damping members to further reduce lever vibration.



3,732,747

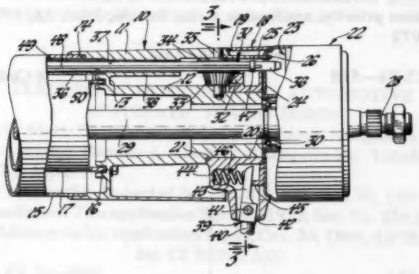
GEARSHIFT ARRANGEMENT

Henry I. Piziks, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1972, Ser. No. 221,642

Int. Cl. G05g *7/02*

U.S. Cl. 74—487 **4 Claims**



The drawings illustrate a gearshift mechanism including a gearshift lever bowl assembly mounted above the upper column housing and encompassing a steering column-mounted gearing arrangement which is responsive to rotary movement of a manually actuated selector lever to axially actuate a cable extending to a transmission shift lever.

3,732,748

CONTROL DEVICE FOR THE MANUAL REGULATION OF THE SPEED OF COMPRESSION-IGNITION ENGINES

Paolo Cavalli, Brescia, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

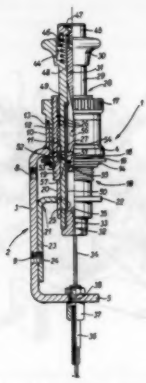
Filed July 6, 1971, Ser. No. 159,906

Int. Cl. F16c *1/22*

U.S. Cl. 74—502 **10 Claims**

The speed of a compression-ignition engine is regulated by a manually operable control device according to this invention which acts on a control lever in the engine fuel system to place the lever, with precision, selectively in engine stopped, idling speed and predetermined speed settings. The control device includes a movable body connected to an actuating cable and

carrying a spring-loaded latch which is engageable in a selected detent carried by a surrounding tubular body to



achieve the desired setting. The surrounding body is itself adjustable by screw action in a support so as to provide for fine adjustment of the actuating cable.

3,732,749

LEVER MECHANISM WITH VARIABLE MECHANICAL ADVANTAGE

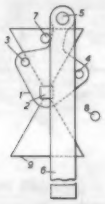
Raymond Richard James Thatcher, Westdene, Brighton, Sussex; Anthony Gerald Richard Ediss, Burgess Hill, Sussex, and Brian James Wheeler, Partridge Green, Sussex, all of England, assignors to Worcester Valve Company Limited, Haywards, Heath, Sussex, England

Filed Mar. 8, 1972, Ser. No. 232,805

Claims priority, application Great Britain, Mar. 11, 1971, 6,579/71

Int. Cl. G05g *7/04*

U.S. Cl. 74—518 **4 Claims**



A lever mechanism for exerting variable torque about the axis of a valve spindle in which a stationary abutment member, a movable abutment member rotatable with the spindle, and a pivot pin are mounted on a valve with a lever arm which provides an initial mechanical advantage between the lever and the spindle until after some rotation has occurred, spindle and lever move in unison with a final mechanical advantage, the initial mechanical advantage being greater than the final mechanical advantage.

3,732,750

DIFFERENTIAL DRIVE ASSEMBLY

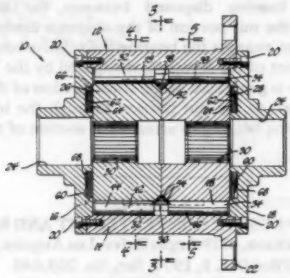
Raymond C. Posh, Livonia, Mich., assignor to Lear Siegler, Inc., Detroit, Mich.

Filed June 7, 1971, Ser. No. 150,318

Int. Cl. F16h *35/04*

U.S. Cl. 74—650 **16 Claims**

A differential drive assembly including a barrel-like housing surrounding a pair of juxtaposed coaxial sleeves internally splined to receive axles. A first set of sprags or locking elements are disposed circumferentially about one of the sleeves between the circular outer surface of the sleeve and the housing and a second set of like sprags are similarly disposed between the housing and the other sleeve. In one embodiment a single cage member having a central band with fingers extending from opposite sides thereof is disposed between the sleeves and the housing to coact with the sprags, the sprags of this embodiment having arcuate surfaces disposed in recesses



in the housing having mating or the same arcuate surfaces so that each sprag rotates about a longitudinal axis. In the second embodiment there is included two similar cage members and the sprags have oppositely disposed arcuate surfaces which are interconnected by generally parallel and spaced side surfaces. The unitary cage members for coacting with both sets of sprags moves both sets of sprags in unison in one mode of operation and limits the amount of relative movement between the first and second sets of sprags when in the second mode of operation.

3,732,751

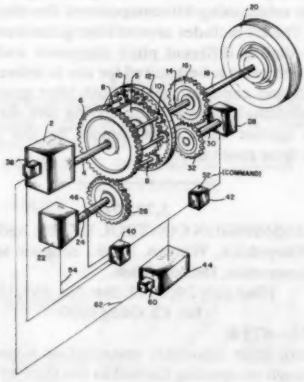
POWER TRAIN USING MULTIPLE POWER SOURCES

Baruch Berman; George Howard Gelb; Neal Allen Richardson, and Tsih C. Wang, all of Palos Verdes Peninsula, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 807,870, March 17, 1969, Pat. No. 3,566,717. This application Mar. 2, 1971, Ser. No. 120,261. The portion of the term of this patent subsequent to Mar. 2, 1988, has been disclaimed.

Int. Cl. F16h *37/08*; B60k *1/04*; B60l *11/12*

U.S. Cl. 74—675 **5 Claims**



A power train is described which is comprised of a prime mover, two power converters, an epicyclic gear train, an ener-

gy storage device and associated control systems. In the preferred embodiment, the prime mover, an internal combustion engine, typically supplies power to the gear train which apportions mechanical power to one of the power converters—an electrical generator—or to the output shaft of the power train. Power from the generator is delivered to either or both the energy storage device, a battery, and the second power converter, an electrical motor-generator which is dynamically coupled to the output shaft.

The power train may be operated in one of two modes, in the first, the internal combustion engine runs at constant speed and relatively constant low power. Engine operation of this nature allows the use of small displacement engines burning lean fuel-air mixtures, thereby reducing engine exhaust emissions. Engine power output control in the first mode is accomplished by changing the loading of the generator on the engine in a feedback control manner. The motor-generator is controlled by the operator who uses a system which controls the flow of power from the generator and/or battery combination to the motor or the flow of power from the motor-generator to the battery. In the second mode of operation, all engine power is mechanically directed to the output shaft and the engine operates in a variable throttle manner. As in the first mode, output shaft peak power demands are satisfied by drawing power from the battery and therefore the engine throttle excursions are minimized. Excess engine power and regenerative power due to external forces acting on the output shaft can be transformed in the second power converter for storage in the energy storage device.

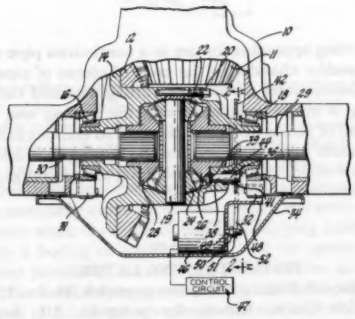
In either mode, it is possible to vary the power settings of the engine slowly to reflect the mean power demand on the power train. Typically the state of battery charge would be used as the control variable.

3,732,752

LOCKING TYPE DIFFERENTIAL GEAR MECHANISM

Theodore N. Louckes, Lansing; Ronald H. Haas, Okemos, and Morris J. Duer, Lansing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 26, 1971, Ser. No. 165,981
Int. Cl. F16h *1/44*
U.S. Cl. 74—710.5 **5 Claims**



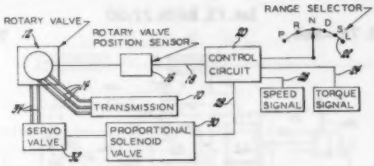
A differential gear mechanism having a locking arrangement for selectively locking the mechanism's rotary case and one side gear including locking pins that are carried by the case and are normally biased to an unlocked position and a solenoid that operates through linkage to bias the locking pins to a lock position lockingly engaging the case to the one side gear with such linkage yielding when the locking pins are not aligned for such engagement to maintain the biasing force to effect engagement on alignment.

3,732,753

ELECTROHYDRAULIC TRANSMISSION CONTROL

Howard E. Olsen, Iron Mountain, and Robert J. Petry, Berkley, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 7, 1972, Ser. No. 216,110
Int. Cl. B60k *21/00*; F16h *3/74*
U.S. Cl. 74—866 **3 Claims**



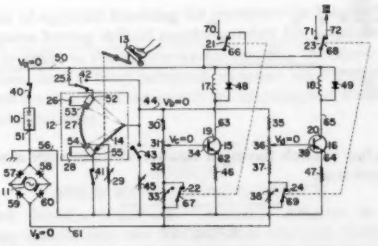
A closed loop control for an automotive vehicle transmission includes a hydraulically driven rotary valve for selectively connecting feed and exhaust hydraulic lines to the transmission brakes and clutches thereby selecting an operational mode of the transmission according to the rotational position of the valve. An electrical transducer produces a signal corresponding to the valve position. A control circuit responsive to the position of a manually controlled range selector, a transmission output speed signal and an input torque signal generates a voltage according to the desired operational mode and compares this voltage to that from the rotary valve position sensor. A control signal is generated according to the difference in these voltages which control signal actuates a proportional solenoid valve which in turn controls the position of a spool valve. The spool valve then hydraulically operates the rotary valve to move it to a position determined by the control signal so that the new position will be consistent with the operating mode selected by the control circuit.

3,732,754

ELECTRONIC GOVERNOR FOR AUTOMOTIVE AUTOMATIC TRANSMISSION

Yoichi Mori, Tsurami-ku, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Continuation-in-part of Ser. No. 872,124, Oct. 29, 1967, abandoned. This application Jan. 26, 1972, Ser. No. 220,971
Claims priority, application Japan, Oct. 30, 1968, 43/78835
Int. Cl. B60k *21/02*
U.S. Cl. 74—866 **4 Claims**



A control device for electronically controlling the gear shifts in an automotive automatic transmission in response to changes in the vehicle speed and in the displacement of the accelerator pedal. Signals are produced representing the changes at any given time in the vehicle speed and position of the accelerator pedal to raise the gear shifting point to higher vehicle side particularly when the vehicle is running on an ascent or descent or when the engine is operating at a low temperature.

3,732,755
DIGITAL SHIFT CONTROL FOR VEHICULAR TRANSMISSION

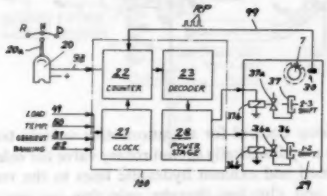
Willi Beig, Waggershausen; Willi Kuhnle, Friedrichshagen, and Herbert Seibold, Mariabrunn, all of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Mar. 18, 1971, Ser. No. 125,633

Claims priority, application Germany, Mar. 19, 1970, P 20 13 079.4

Int. Cl. B60k 21/00

U.S. Cl. 74—866 **7 Claims**



To change the speed ratio of an automatically shiftable power train by which the torque of an engine is transmitted to the traction wheels of a vehicle, a logic circuit emits commands to respective solenoid valves in response to a combination of operating parameters such as vehicle speed, engine temperature, accelerator position and road gradient. Speed is measured by a pulse generator, coupled with the output shaft of the transmission, whose pulses are counted by an accumulator that is periodically reset by a timing circuit and whose count between resettings is fed to the logic circuit together with signals indicating the position of a manual speed selector. The remaining parameters are used to modify the rhythm of the timer or the operation of a decoder inserted between the accumulator and the logic circuit.

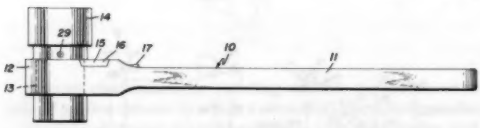
3,732,756
RATCHET WRENCH

Harvey A. Thomasian, Northboro, Mass., assignor to Lowell Corporation, Worcester, Mass.

Filed Aug. 13, 1971, Ser. No. 171,649

Int. Cl. B25b 13/46

U.S. Cl. 81—62 **2 Claims**



A ratchet wrench having a ratchet element with a socket facing each side.

3,732,757
HYDROSTATIC END PRESSURE BALANCING DEVICE FOR MACHINE TOOLS

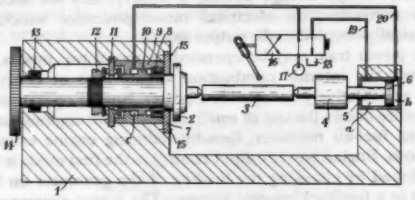
Jean Claude Cottin, Paris 80, France, assignor to Produmatic, Chateauneuf en Thymerais, France

Filed Dec. 2, 1971, Ser. No. 204,205

Int. Cl. B23b 3/00

U.S. Cl. 82—2 **4 Claims**

In this balancing device for equalizing the pressure exerted on the tailstock dead center and the workpiece holding spindle of a machine tool, the tailstock center is responsive to the action of a piston slidably mounted in a cylinder having its rear chamber supplied with compressed hydraulic fluid and a distance-piece mounted about the spindle portion extending within the headstock urges said spindle through the medium of the inner race of the front bearing under the control of the compressed hydraulic fluid supplied to a chamber formed at the front by said distance-piece. A manual control is provided for hydraulically actuating said dead center either in the clamping direction towards said workpiece holding spindle or in the release direction.



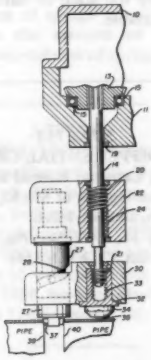
3,732,758
PIPE CUTTING APPARATUS

Michael S. Rinaldo, 1921 Sequoya Drive, Youngstown, Ohio

Filed Mar. 8, 1971, Ser. No. 121,885

Int. Cl. B23b 5/16

U.S. Cl. 82—4 C **5 Claims**



Pipe cutting apparatus for use in a continuous pipe mill for squaring and/or chamfering the ends of pieces of pipe cut in the mill incorporates a rotatable cutting tool and means for advancing it into engagement with the trailing end and/or leading end of pieces of pipe to be squared and/or chamfered. The apparatus imparts rotation to the cutting tool simultaneously with motion advancing the cutting tool into engagement with the pipe ends.

3,732,759
PISTON TURNING LATHE

Igor Nikolaevich Fedorenko, Zeliev pereulok 34, kv. 1; Fedor Vasilievich Gurin, Kutuzovsky prospekt, 2/1, kv. 187; Vadim Mikhailovich Smelyansky, Mikulsky pereulok, 13, kv. 1; Alexei Vasilievich Voronin, B. Pochtovaya ulitsa, 18/20, korpus 11, kv. 48, and Alexei Dmitrievich Kuranov, 1 Kirpichny pereulok, 19, kv. 9, all of Moscow, U.S.S.R.

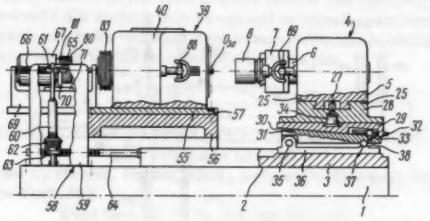
Filed Oct. 5, 1971, Ser. No. 186,721

Int. Cl. B23b 5/24

U.S. Cl. 82—19 **7 Claims**

A piston-turning lathe comprising a head carrying the work spindle and a tool head provided with cutting tools for preliminary and finish machining of pistons during rotation of the spindle.

The lathe also has a drive for synchronous rotation of the tool head spindle and work head spindle and devices for displacing the work head spindle axis in two mutually perpendicular planes relative to the axis of the tool head spindle, said spindles being installed with a provision for turning their axes in the direction of working feed while the work head spindle



is, additionally, installed with a provision for inclining its axis in the same direction, and there is also a means for mutual relative turning of the work head and tool head spindles by the mechanism for setting the tool holders with the cutting tools for preliminary and finish machining.

3,732,760

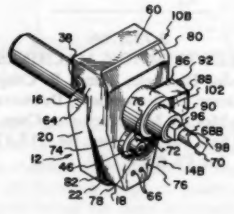
TOOL HOLDER

Wesley E. Parks, P.O. Box 132, Loveland, Colo.

Filed Feb. 10, 1971, Ser. No. 114,125

Int. Cl. B23b *29/10*

U.S. Cl. 82—36 R **11 Claims**



This invention relates to a tool holder for cutting tools and the like which includes a chuck piece fastenable into the chuck of a machine tool turret and a pair of interchangeable tool-carrying heads that are fastened to the chuck piece so that the tool can be adjusted in its position relative to the work piece. One of the tool-carrying heads holds an external cutting tool for essentially radial movement toward and away from the work piece while the other of said tool-carrying heads carries primarily a boring or inside cutting tool for generally axial movement parallel to the axis of rotation of the work piece. Both of the tool-carrying heads provide for three adjustments of the tool relative to the work piece, two of which are common and the other exclusive. Each includes a fine arcuate adjustment of the entire head relative to the chuck piece in a plane normal to the axis of rotation of the work piece and also a circular adjustment in this same plane by means of a rotatable eccentric pin selectively mountable in either of two positions in the head. The outside or turning tool head includes provision for coarse transverse straight-line adjustment of the tool toward and away from the work piece in a plane normal to the axis of rotation thereof; whereas, the inside or boring tool head contains means for moving the tool in a straight line longitudinally parallel to the tool rotation axis.

3,732,761

CUTTING MATERIAL INTO LENGTHS

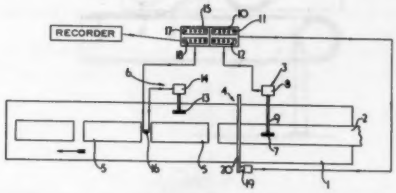
Harry Sanders, Water Orton, near Birmingham, England, assignor to Dunlop Holdings Limited, London, England

Filed May 7, 1970, Ser. No. 35,347

Claims priority, application Great Britain, May 13, 1969, 24,209/69

Int. Cl. B26d *5/40*

U.S. Cl. 83—37 **10 Claims**



Method and apparatus for cutting material into lengths, particularly for cutting tread rubber strips for tires, to maintain the length equal to or substantially equal to a predetermined value independent of any errors which may occur due to for example to mechanical lags, poor lubrication or general wear. Cut lengths are measured and the measured size compared with a predetermined value, and any required correction applied to the cutter automatically.

3,732,762

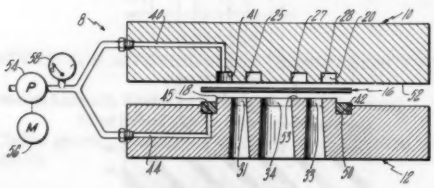
BLANKING DIE STRIPPING SYSTEM

Edwin W. Plumb, Linden Road, Woodbury, Conn.

Filed Mar. 22, 1971, Ser. No. 126,571

Int. Cl. B26d *7/00*

U.S. Cl. 83—98 **9 Claims**



A pair of opposed blanking die members for blanking sheet metal parts having a fluid supply conduit for supplying fluid under pressure to the die cavity for ejecting the blanked part therefrom and a fluid actuated stripper ring reciprocably mounted on the blanking punch for ejecting the sheet metal skeleton therefrom.

3,732,763

STRIP WITHDRAWING DEVICE

Gerhard Smuda, Hamburg, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 26, 1971, Ser. No. 137,546

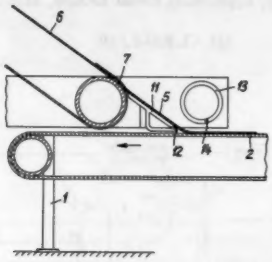
Claims priority, application Germany, April 25, 1970, P 20 20 398.9

Int. Cl. B26d *7/06*

U.S. Cl. 83—98 **6 Claims**

For use in connection with the building up of tires, a device for withdrawing strips cut off at a bias on a strip cutting device, which includes an endless conveyor belt having one of its reversing drums arranged close to the strip cutting device with the axis of rotation of said one reversing drum substan-

tially parallel to the bias cut edge of the cut off edge while adjacent the other reversing drum there is provided a chute



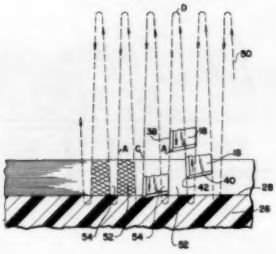
adapted to be pivoted into different directions for distributing cut off strips of web material over different processing paths.

3,732,764

APPARATUS AND METHOD FOR CUTTING SHEET MATERIAL WITH CHOPPING TYPE BLADE MOTION

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Government Technology, Inc., East Hartford, Conn.

Filed Mar. 1, 1971, Ser. No. 119,792
Int. Cl. B26d *1/00, 5/30*
U.S. Cl. 83—34 **12 Claims**



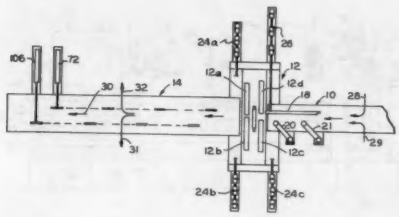
An apparatus and associated method for cutting sheet material spread in one or more layers over a supporting surface uses a reciprocating cutting tool cutter movable in two coordinate directions in the plane of the supporting surface to enable the cutting tool to follow a desired line of cut relative to the sheet material. The cutting tool has, at its lower end, a generally downwardly facing sharpened edge, and the stroke of the cutting tool is such that during a portion of each cycle of reciprocation it is located entirely out of the material being cut. During such portion of its cycle of reciprocation it is moved forwardly along the desired line of cut a substantial distance so that during its following downward movement through the material it encounters a substantial length of uncut material which is pressed between the sharpened lower end of the tool and the supporting surface so as to cut the material with a chopping action. The supporting surface is formed by a material which is penetrable by the lower end portion of the cutting tool, and at the lower limit of its reciprocation the lower end of the cutting tool does penetrate the supporting surface to assure cutting of the sheet material through its full vertical thickness.

3,732,765

SWEEP TABLE FOR WOOD-PROCESSING MILL

Rene Fritz, and Rene E. Fritz, both of Albany, Oreg., assignors to Albany International Industries, Inc., Albany, Oreg.

Filed Nov. 24, 1971, Ser. No. 201,730
Int. Cl. B27b *15/08, 31/08*
U.S. Cl. 143—5 **18 Claims**



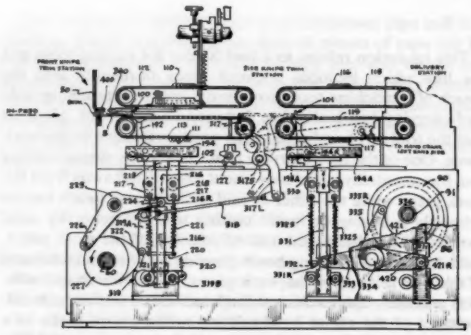
An outfeed conveyor table has two sets of sweep fingers positioned behind four ganged saws of a wood-processing mill. The saws are laterally adjustable to vary their spacing. Each set of sweep fingers can be aligned independently of the other set in a home position behind any one of the four saws and maintained in its selected home position by an independent setworks which coordinates the movement of the set of fingers with any movement of its corresponding saw. Each finger set can also be positioned at either side of the conveyor path and swept to the opposite side to sweep all cut material laterally in either direction from the table. From any of their home positions, one finger set is adapted to sweep in one direction across the table while the other set is adapted to sweep in the opposite direction. Either or both sets of fingers can also be maintained in retracted positions to permit some or all cut pieces to pass downstream from the end of the conveyor table.

3,732,766

SHEET TRIMMING MACHINES

William B. McCain, Hinsdale; James F. Cosgrove, Western Springs, and Elmer D. Bewersdorf, Downers Grove, all of Ill., assignors to McCain Manufacturing Corp., Chicago, Ill.

Filed Feb. 16, 1971, Ser. No. 115,174
Int. Cl. B26d *5/42, 11/00*
U.S. Cl. 83—104 **6 Claims**



A three-knife sheet trimmer is so constructed as to separate the drive for the knives (one front knife and two side knives) from the drive for the clamps which hold the sheets (e.g. the sheets of a book) stationary while being trimmed. The knives at the stations are operated out of phase, and the moving masses are therefore balanced compared to the previous form of these trimmers where all knives move in the same direction

at the same time. Separating the drives also enables a book to be sooner advanced from the first knife station to the second knife station. This being so, there is a greater allowance of time in which to make the transfer, and hence there is no need to rush the book.

The stops at the several knife stations against which a book is advanced may be adjusted simultaneously, and the separate feed means which advance or feed the books first from the first knife station to the second knife station and then out of the second knife station, may be opened or spread apart simultaneously either for re-adjustment to accommodate books of a different size or for the purpose of clearing a jam.

3,732,767

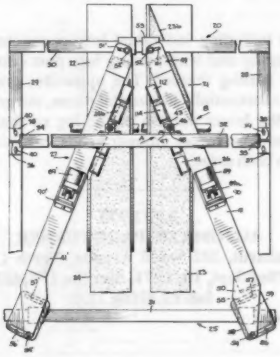
CUT-TO-LENGTH APPARATUS FOR BIAS-CUT TIRE BELT PLY MATERIAL

William C. Habert, Fraser, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,163

Int. Cl. B26d 7/10

U.S. Cl. 83—171 **15 Claims**



An apparatus for the contemporaneous bias-cutting of two elongated strips of rubberized tire belt or breaker ply material with reinforcing elements of opposed bias angles into relatively shorter belt ply-forming strips of predetermined lengths, each starting strip being cut from its middle toward its opposite edges. The apparatus includes two coaxial, rotatable, cylindrical drum-like anvils for the starting strips, and two pairs of normally retracted, non-rotary, heated cutting blades, the two blades of each pair being mounted for joint reciprocal opposed movements along a respective curved path the obliquity of the plane of which relative to the mid-circumferential plane of the associated drum can be adjusted, preferably about an axis located in the mid-circumferential plane of the associated drum and perpendicular to the drum axis, so as to correspond to any desired one of a range of such bias angles. The curvature of each path is such that in the mean adjusted position thereof it is disposed at a substantially constant spacing from the associated drum surface. The cutting blades of each pair are arranged to abut against each other at the mid-point of their respective path of movement, with the parting line of their cutting edge tip region in line with the associated pivot axis, so that any underlying strip is penetrated in the middle thereof when the blades are protracted against the associated drum surface. Suitable means are also provided for yieldingly urging the blades continuously into contact with the associated drum surfaces during the separating movements of the blades while performing the cutting operation so as to compensate for variations in the spacing between their paths of movement and the drum surfaces engendered by angular adjustments of the paths to other than the mean adjusted positions thereof.

3,732,768

MICROTOME KNIFE MOUNT

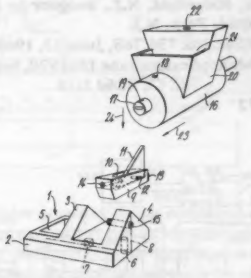
Stuart Arthur Hodson, London, and John Marshall, Kent, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 6, 1971, Ser. No. 131,697

Claims priority, application Great Britain, Apr. 7, 1970, 16,410/70

Int. Cl. G01n 1/06

U.S. Cl. 83—171 **16 Claims**



A knife mount is proposed for a microtome to be used for cutting ultra-thin sections. The proposed mount is formed with a trough for coolant, such as liquid nitrogen, and provided with a heater, the mount, including trough and heater, being symmetrical about a plane therethrough and adapted to support a knife by way of a connection disposed in the plane of symmetry. This knife mounting arrangement reduces the effects of differential expansion and contraction on the knife cutting edge disposition. In a preferred arrangement the knife cutting edge is parallel to the plane of symmetry, and the mount co-operates with a specimen holder to provide relative feeding movement perpendicular to said plane, and relative cutting movement perpendicular to the cutting edge and parallel to said plane.

3,732,769

DEVICE FOR APPLYING SLIDE TRANSPARENCY TO MOUNTING

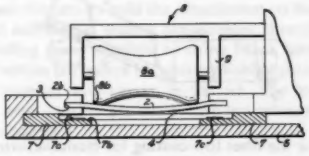
Johannes Loersch, Krefelder Strasse 40, Huls, Germany

Filed Feb. 1, 1971, Ser. No. 111,204

Claims priority, application Germany, Jan. 30, 1970, P 20 04 095.3

Int. Cl. B26d 7/08

U.S. Cl. 83—176 **5 Claims**



A device for applying slide transparencies to a mount half, a slide tract being included wherein a strip of developed film is led by grooves to over a mount half having two adhesive points on opposite sides of the image window. The track terminates just short of a position directly over a recessed reception table to support the mount half. The film strip is bowed slightly downwardly in a trough-like manner as seen from above by a roller shaped as a hyperboloid which bears on the film strip at its edges just outside of each groove on the track containing the edges of the film. The arrangement provides support for

the film so that it extends over the mount half without bending upwardly or downwardly and, when positioned, as desired, is cut by a knife so as to be received in a recess therefor which surrounds the image window with a pair of self sticking adhesive points thereon securing the transparency precisely in place so that it is not dislodged on subsequent movement of the mount half.

3,732,770

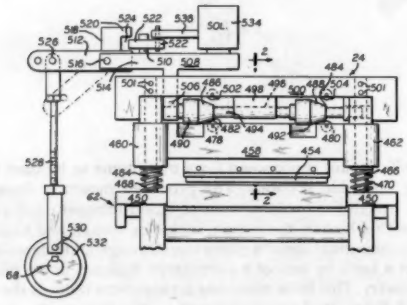
CUTTING MEANS

Gerald Ottavan, Ridgefield, N.J., assignor to Allamatic Corporation, Cliffside Park, N.J.

Division of Ser. No. 736,768, June 13, 1968, Pat. No. 3,567,148. This application June 15, 1970, Ser. No. 46,426

Int. Cl. B26d *5/16*

U.S. Cl. 83—572 **3 Claims**



A cutter for cutting labels as they move off a printing press without using shear. The cutter includes means for operating the cutter bar to separate labels singly or into groups. The cutter includes a movable die which is moved into and out of cutting relation with the label paper by means of a pair of eccentrically actuated links in order to apply uniform cutting pressure over the entire head of the movable die.

3,732,771

KNIVES FOR FIBER TOW-CUTTING APPARATUS

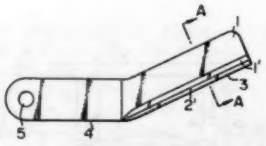
Saijiro Kinoshita, and Katsunobu Shinmura, both of Matsuyama-shi, Ehime-ken, Japan, assignors to Teijin Limited, Osaka, Japan

Filed July 7, 1971, Ser. No. 160,293

Claims priority, application Japan, Aug. 26, 1970, 45/74818

Int. Cl. B26d *1/28*

U.S. Cl. 83—663 **9 Claims**



In knives for the fiber tow-cutting for manufacturing staples by cutting synthetic tows, the improvement comprising

i. making the blade body of such knives of a steel material having the following composition:

Content of C	0.08 – 1.10% by weight
Content of Si	0.15 – 0.80% by weight
Content of Cr	0.40 – 1.80% by weight
Total content of Mn, P and S	0 – 1.75% by weight
Content of metallic impurities other than Fe and the above components	0 – 5.00% by weight
Content of Ee	remainder of a total of 100% by weight; and

ii. providing only on one side of such knives a metallic coating layer a thickness ranging from 2 microns to 50 microns and a Vickers hardness of above 700.

3,732,772

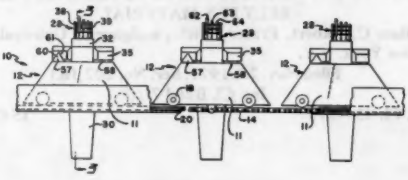
LOG CARRIAGE APPARATUS

Peter J. Neild, North Vancouver, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Division of Ser. No. 726,996, May 6, 1968, Pat. No. 3,603,362. This application May 17, 1971, Ser. No. 144,047

Int. Cl. B27b *29/08*

U.S. Cl. 83—730 **8 Claims**



Apparatus including individual interconnected supporting units for gripping and transporting logs past cutting elements for accurate cutting thereof. The apparatus grips and holds each log in a substantially horizontal plane, the gripping taking place along the lower portion of the log so that cutting elements, such as saws and/or chipper heads, can cut the log from above and on both sides.

3,732,773

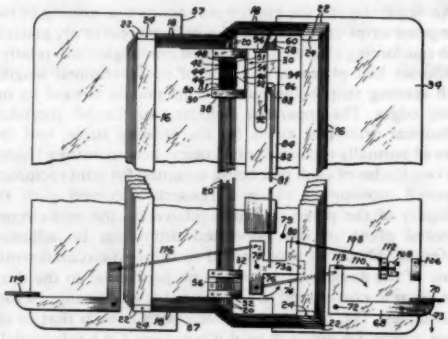
AUTOMATIC PAGE TURNER

Aldo L. Bombardi, 202 Smull Avenue, North Caldwell, N.J.

Filed Sept. 10, 1971, Ser. No. 179,453

Int. Cl. G10g *7/00*

U.S. Cl. 84—491 **16 Claims**



A plurality of vertically disposed resilient wire rods are pivotally mounted in bushings which are spaced along the ends of the rods and secured on a base plate. Each rod pivots about a separate vertical axis through the bushings and is spring biased toward one side of the base plate. The opposite ends of each rod are bent to extend horizontally, with each horizontal extension being spaced apart vertically to avoid interference with the other rods. A pair of vertically extending clear flexible plastic strips are secured between the ends of the opposite horizontal extensions of each rod. The plastic strips of each pair are positioned one above the other to engage the front and back faces of a page of a book or a sheet of music

which is inserted between the strips. The outer cover or pages are held in place against the base plate by clamps.

In the latched position, the rods are pivoted to the right side of the base plate with each upper horizontal extension engaging a corresponding individual slot in a vertically disposed latching bracket. A lever release mechanism operates a vertical control rod having a pawl at the end which engages the teeth of a slideable rack. The rack is moved upwardly against the horizontal wire rod extensions which are pushed out of the slots to permit the spring biased vertical rods to pivot back to the left with the pages carried between the plastics strips. Each movement of the lever causes the pawl to move the rack upwardly another notch against the next horizontal rod extension to successively release all of the rods and turn the pages from right to left back into the normal position.

3,732,774

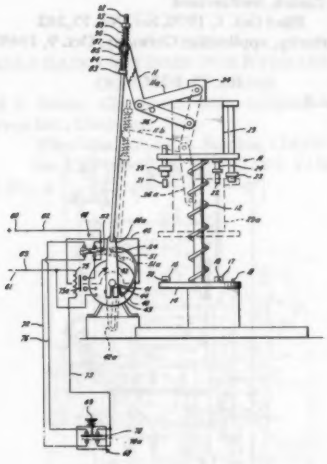
AUTOMATIC RELOADING APPARATUS AND SHOTGUN SHELL DRIVE MEANS THEREFOR

Tommy K. Griffin, 539 Hidden Valley Drive, Houston, Tex.

Filed May 5, 1971, Ser. No. 140,486

Int. Cl. F42b *33/02*

U.S. Cl. 86—23 **4 Claims**



Automatic shotgun shell reloading apparatus and drive means therefor, wherein a shell reloading apparatus having plural sequential reloading stages is driven by operation of an electric motor one-half rotation at a time to give up and down movements to the operating lever of the shell reloading apparatus.

3,732,775

PRISM VIEWFINDER FOR MIRROR REFLEX CAMERAS

Hans Warstat, Stuttgart, Germany, assignor to Fritz Victor Hasselblod, Goteborg, Sweden

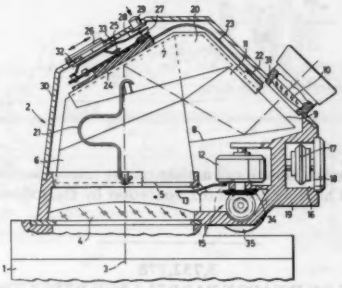
Filed Apr. 20, 1971, Ser. No. 135,728

Claims priority, application Germany, Apr. 30, 1970, P 20 21 179.4

Int. Cl. G01j *1/16*

U.S. Cl. 88—1.5 R **16 Claims**

In a prism viewfinder for mirror reflex cameras having the roof edge of the prism displaced from and opposite to the ray incidence surface of the prism and a plane mirror surface substantially parallel to the ray incidence surface, laterally displaced from and within the range between the roof edge and the ray incidence surface and adapted to direct the ray path out of camera whereby the direction of emergence of the ray path forms an angle of about 45° with respect to the direction of incidence of the ray path; the improvement in which at least the galvanometer of an electric exposure meter is substantially disposed between the plane mirror surface and a plane passing through the ray incidence surface. In the preferred embodiment, a viewfinder adjusting disc is combined with a field lens on the opposite side of the ray incidence surface and spaced therefrom, and measuring circuit components of the exposure meter are substantially disposed between the plane mirror surface and a plane passing through the adjusting disc.



3,732,776

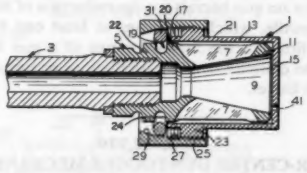
BLANK FIRING ATTACHMENT

Robert E. Snodgrass, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 17, 1971, Ser. No. 181,486

Int. Cl. F41f *17/00*

U.S. Cl. 89—14 E **8 Claims**



A blank firing attachment is provided for automatic weapons which comprises a cylindrical member one end of which is open for slideable mounting on the muzzle end of the weapon barrel. A collet and split ring arrangement is associated with the open end of the member and is adjustable with respect thereto to hold the attachment on the muzzle end and effect substantial sealing engagement therewith whereby the expanding gases incident to firing blank ammunition are confined within the barrel for accomplishing automatic operation in a manner well-known in the art. The housing is also provided with vent means for controlled release of the gases within the barrel.

3,732,777

MISSILE LAUNCHING MECHANISM

Lawrence M. Ludwick, Costa Mesa, and Elmer E. Maislo, Fountain Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

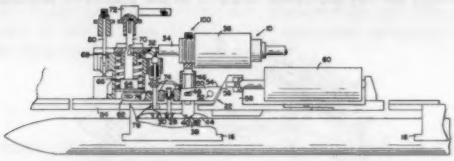
Filed Aug. 18, 1971, Ser. No. 172,799

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.807 **3 Claims**

A mechanism for supporting, restraining and firing a missile. The missile is supported on a launch rail and restrained

from movement by a detent holding means. After ignition, the missile is held until sufficient thrust is developed to overcome restraining force of the holding means. As the missile moves



forward on the launch rail a plate on the missile surface resets the detent holding means for operation by the following missile.

3,732,778

DEVICE ON WEAPON BARRELS FOR REDUCTION OF THE ANGLE JUMP OF A PROJECTILE

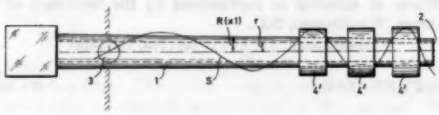
Peter Bettermann, Bad Kreuznach; Heinz Reuschel, Tiefenbroich, and Manfred Wolf, Bad Kreuznach, all of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Feb. 27, 1970, Ser. No. 15,132

Claims priority, application Germany, Mar. 5, 1969, P 19 11 067.9

Int. Cl. F41f *17/02*

U.S. Cl. 89—14 R **1 Claim**



A device on gun barrels for the reduction of the angle jump of a projectile, which comprises at least one reinforcement member fitted to the forward range of a gun barrel, and is adapted to dampen bending oscillations occuring upon firing in the gun barrel.

3,732,779

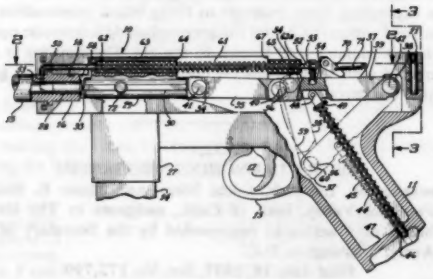
UNDER-CENTER GUN TOGGLE MECHANISM WITH TOGGLE BIASING MEANS AT GIVEN POSITION

Walter E. Perrine, 11833 W. Olympic Boulevard, Los Angeles, Calif.

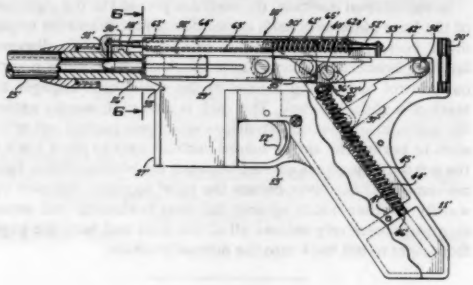
Filed Oct. 22, 1971, Ser. No. 191,619

Int. Cl. F41c *5/02*

U.S. Cl. 89—189 **8 Claims**



A toggle action pistol in which an under-center toggle is tripped to recede into its handle by the effects of gas pressure generated at the time of firing and employing a toggle biasing



means at a given position on the toggle mechanism.

3,732,780

APPARATUS FOR PRODUCING VARIABLE RATIO GEARING

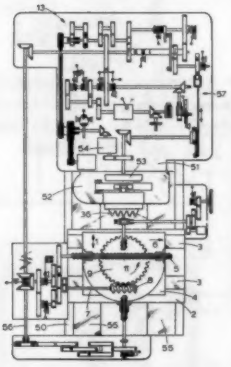
Robert Wydler, and Erhard Ruesch, both of Zurich, Switzerland, assignors to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland

Filed Oct. 1, 1970, Ser. No. 77,242

Claims priority, application Germany, Oct. 9, 1969, P 19 50 959.2

Int. Cl. B23f *5/14*

U.S. Cl. 90—8 **5 Claims**



A variable ratio gear component, such as a motor vehicle steering segment, is produced by arranging that relative motion between a workpiece forming the component and a tool includes a normal generating component and a graduated additional generating component, the latter being imparted to the workpiece tangentially to the generating path of the tool and workpiece. An adaptation of a gear cutting machine is described to provide for the inclusion of such an additional motion derived from the rotation of the workpiece relative to the table.

3,732,781

KEY VISE

Philip C. Hungerford, Jr., Cleveland; John L. Gereby, Wickliffe, and Robert H. Richens, Bedford Heights, all of Ohio, assignors to Cole National Corporation, Cleveland, Ohio

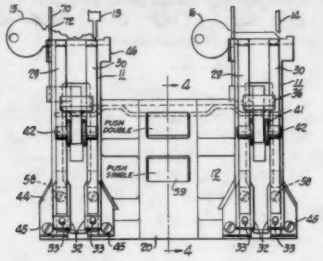
Filed Apr. 13, 1971, Ser. No. 133,581

Int. Cl. B23c *1/16*

U.S. Cl. 90—13.05 **27 Claims**

A key vise is disclosed for a key cutting machine. The vise utilizes beam springs acting on relatively movable first and

second jaws with an eccentric loading an intermediate point of the beam springs to tightly clamp a key between the vise jaws. A retention spring of small force initially holds the key in position in the vise before the jaws are clamped and a gauge means is provided to selectively position either single sided or double-sided keys. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.



3,732,782

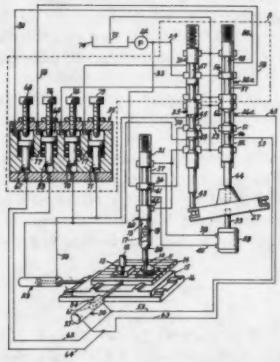
VARIABLE GAIN AMPLIFIER FOR HYDRAULIC SERVO-CONTROL SYSTEMS

Wendell I. Evans, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 15, 1971, Ser. No. 124,165

Int. Cl. F01b *25/02;* **F15b** *21/02;* **F15c**

U.S. Cl. 91—6 **1 Claim**



An hydraulic servo-control system has a variable gain amplifier which generates a control force large enough to overcome static forces resisting movement of a machine slide and minimize the effect of forces which cause compression of the hydraulic fluid. The variable gain amplifier then operates at a lower gain level once the slide is in a kinematic state.

3,732,783

FLUID CYLINDER HAVING SELF-LOCKING MEANS

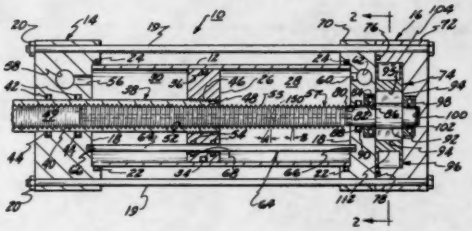
Richard G. Emenaker, Romeo, Mich., assignor to Harry S. Nichols, Jr., Troy, Mich., a part interest

Filed Feb. 11, 1971, Ser. No. 114,575

Int. Cl. F15b *15/26*

U.S. Cl. 91—44 **7 Claims**

A fluid cylinder having a tubular housing with a piston reciprocably mounted therein and capable of fluid pressure actuation in opposite directions. One side of the piston carries an actuating rod which slidably extends through one end of the tubular housing, while a coaxially aligned bore extending from the opposite side of the piston and into the actuating rod has a threaded surface adapted to receive a threaded member which, in turn, is rotatably carried at the other end of the tubular housing. The threaded surfaces of the piston bore and the rotatable threaded member engage in a self-locking relationship such that the piston is incapable of movement when subjected to fluid pressure unless the threaded member is initially and continually rotated. Means are provided for selectively rotating the threaded member upon fluid pressure actuation of the piston in either direction.



3,732,784

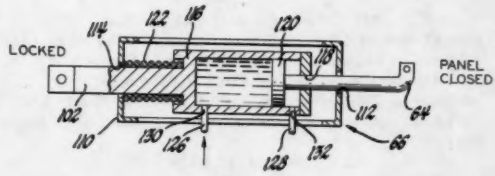
SEQUENTIALLY OPERATING LINEAR ACTUATOR

Robert A. Vogelei, Lathrup Village, Mich.; Richard W. Kirkman, Harpenden, England, and Alverson B. Williams, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 860,907, Sept. 25, 1969, Pat. No. 3,622,197. This application Mar. 24, 1971, Ser. No. 127,535

Int. Cl. F01b *7/10, 15/02*

U.S. Cl. 92—65 **2 Claims**

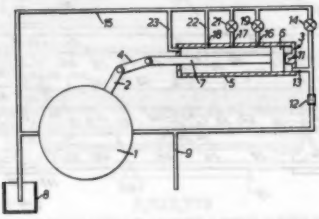


A vehicle body closure includes a base having fore and aft pins to mate with holes in a vehicle body to locate the base in an opening in the vehicle body, a releasable top lock to secure the base to the body, and right and left flipper panels pivotally mounted thereto, with each flipper panel movable between a raised position opening half of the opening and a lowered closed position covering half of the opening. A door-controlled body-mounted sequentially-operating hydraulic linear actuator includes a spring-biased movable cylinder operably connected to a locking mechanism and a movable piston operably removably connected to a base-mounted raising mechanism through the aft pins to sequentially operate in one direction to unlock and then in the opposite direction to raise a flipper panel in response to differential fluid pressure and to operate in the one direction to lower the flipper panel and then in the opposite direction to lock it in response to opposite differential fluid pressure. The base and the flipper panels may also be removed giving a completely open body.

3,732,785
FLUID PRESSURE APPARATUS

Kenneth Raymond Boydell, Tewkesbury, England, assignor to Dowty Technical Developments Limited, Brockhampton, England

Filed Apr. 30, 1971, Ser. No. 138,874
Int. Cl. F01b *13/04*
U.S. Cl. 91—506 **13 Claims**



A variable-displacement pump or a variable-displacement motor having a smoothly adjustable servo-motor for displacement adjustment and a plurality of separate manually operable controls for adjusting the servo-motor to any one of a number of preselected displacements for the pump or motor. For adjustment of the servo-motor to an intermediate displacement position, a valve means is provided actuatable by the servo-motor at a position corresponding to a selected intermediate displacement, and a selecting valve co-operable with the valve means, said selecting valve having two settings, in one of which the valve means is rendered capable of controlling the pressure in a working volume of the servo-motor to arrest movement thereof substantially in the selected position, and in the other of which the valve means is rendered incapable of controlling the pressure in the working volume.

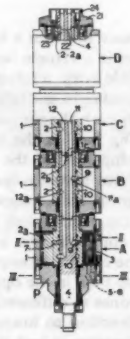
ERRATUM

For Class 92—65 see:
Patent No. 3,732,784

3,732,786
MULTI-STAGE ROTARY JACKS

Albert Grosseau, Chaville, France, assignor to Citroen SA (Automobile Citroen, Berliet, Panhard), Paris, France

Continuation of Ser. No. 810,212, March 29, 1969, abandoned. This application May 13, 1971, Ser. No. 143,157
Claims priority, application France, Mar. 29, 1968, 68146488
Int. Cl. F01b *15/00*; F15b *11/18*
U.S. Cl. 92—66 **8 Claims**



This invention relates to multi-stage rotary jacks, of the kind in which each stage has a vane that is capable of turning with respect to the wall of a cylindrical casing, the vane or the casing constituting, as desired, a rotor and a stator and all the stages being coaxially aligned one above the other.

According to the invention, the stator and rotor members of each stage are idly mounted on a central shaft except for one of said members of an end stage and this excepted end member is keyed to the central shaft to rotate therewith but the rotor of each stage is keyed to the stator of one of its two contiguous stages so as to rotate therewith.

3,732,787
BICYCLE SPEED CHANGE GEAR SHIFTING DEVICE

Eikichi Yamaguchi, Tokyo, Japan, assignor to Maruishi Cycle Industries Ltd., Tokyo, Japan

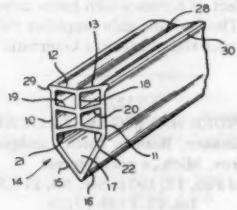
Filed Mar. 16, 1971, Ser. No. 124,715
Int. Cl. F16d *71/00*; B62m *9/04*
U.S. Cl. 192—142 R **1 Claim**

A bicycle change gear transmission according to which one end of a shift lever is secured to a winding drum to which one end of an inner wire connected to the change gear transmission is secured while a clutch drum is secured to the other end of said shift lever, and a rotary gear is interlocked with a motor through the intervention of a transmission gear train. Furthermore, a clutch spring has one end secured to the inner side face of said rotary gear and wound around the clutch drum, a control switch mechanism being mounted adjacent one handle of the bicycle handle bar while a spacer is located contiguously with said rotary gear and has a control plate provided with a set of contact pieces respectively having corresponding slots and projections and connected to said control switch mechanism through separate circuits, two operating switches being provided in said control switch mechanism and connected respectively to a driving circuit and a braking circuit so that the shift lever may be automatically displaced to its predetermined positions by operating said switches selectively.

3,732,788
PAVEMENT JOINT SEALS

Delmont D. Brown, North Baltimore, Ohio, assignor to The D. S. Brown Company, North Baltimore, Ohio

Filed Apr. 26, 1971, Ser. No. 137,310
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **4 Claims**



Elongated, hollow elastomer seals particularly useful for the sealing of concrete pavement joints, bridge deck joints, etc.

against intrusion by liquids and incompressible solids and embodying an elongated, preferably transversely concave top wall; an elongated bottom wall; substantially flat, elongated side walls; and an internal web structure embodying a vertical web substantially midway between the side walls with the lower end of the vertical web spaced from the bottom wall and at least two pairs of lateral webs extending from opposite sides of the vertical web, at least one of which pairs undergoes a toggle-like action when the seal is laterally compressed.

3,732,789

METHOD OF AND DEVICE FOR PACKING ARTICLES

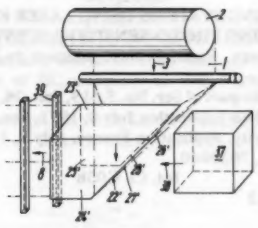
Franz Hartleib, Furstenau, Germany, assignor to Firma Maschinenbau Aachen-Furstenau Gesellschaft mit beschrankter Haftung, Aachen, Reichsweg, Germany

Filed Oct. 27, 1970, Ser. No. 84,427

Claims priority, application Germany, Oct. 27, 1969, P 19 53 969.6

Int. Cl. B31b *1/38*

U.S. Cl. 93—82 12 Claims



A method of and apparatus for forming a channel from a web of packaging material by passing the web over a body of substantially the desired cross section of channel and having guide edges, and changing the direction of movement of the web to form the desired channel. The goods to be packaged are supplied to the zone of the body in the direction in which the formed channel leaves the body.

3,732,790

CORRUGATED CONTAINER AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

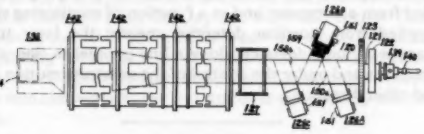
Hajime Miyake, Osaka, and Akio Hayama, both of Japan, assignors to Kabushiki Kaisha Nisso, Osaka, Japan

Filed Dec. 18, 1970, Ser. No. 99,634

Claims priority, application Japan, Dec. 25, 1969, 44/103793

Int. Cl. B31c *3/00*

U.S. Cl. 93—94 R 4 Claims



The present invention relates to the stitchless tubular container and the stitchless box container and the method and the apparatus for manufacturing the same, which containers are produced from material strips by the successive process which comprises the step of making a tubular body, whereby the corrugated strips with their flutes obliquely or longitudinally flowed in the axial direction are superposed on the liner strips, the adjacent edges of adjacent convolutions thereof are overlapped each other, the step of making longitudinal creases on the tubular body, the step of gradually flattening the tubular body thus obtained and finally severing said flat tubular body into individual corrugated containers.

3,732,791

PAVEMENT AND RAILROAD BED CONSTRUCTION WITH LIGHT CONCRETE SUB-LAYER

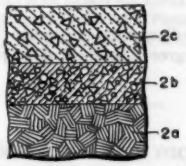
Frieder Hohwiller, Wachenheim, Weinstrasse; Klaus Koehling, Frankenthal, Pfalz; Walter Schneider, and Dietrich Koenig, both of Ludwigshafen, Rhein, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Continuation of Ser. No. 746,010, July 19, 1968, abandoned. This application Mar. 4, 1971, Ser. No. 121,175

Claims priority, application Germany, July 27, 1967, P 16 58 436.4

Int. Cl. E01c *9/00*

U.S. Cl. 404—31 10 Claims



Frost barrier for pavements and railroad bed in the form of a layer of light concrete containing particles of organic foam plastics.

3,732,792

IMAGE PLANE PLATE

Milson S. Tarnopol, Brackenridge; Robert G. Twells, deceased, late of New Kensington, both of Pa. (by Dolores A. Twells, administratrix), and Ronald R. Rigby, Fulling Mill Lane, Ridgefield, Conn., assignors to PPG Industries Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 671,830, Sept. 29, 1967, abandoned. This application Dec. 14, 1970, Ser. No. 97,749

Int. Cl. G03 ; G03c *5/00*; C03c *17/00*

U.S. Cl. 95—1 R 5 Claims

An image plane glass plate used as a mask or template for printing patterns or circuits onto photosensitive material. A portion or zone of the glass plate is made substantially opaque to ultraviolet light by introducing an ion-exchanged zone in a portion including a surface of the glass. Portions of the zone may be then etched away in a circuit pattern, or the zone may take the form of a circuit pattern.

3,732,793

CALIBRATED VARIABLE NEUTRAL DENSITY FILTER FOR A CAMERA

Patrick W. Tague, 2514-56th Avenue, SW., Seattle, Wash.

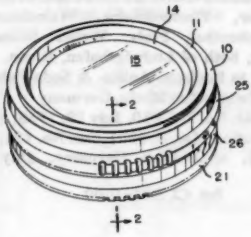
Filed Oct. 26, 1971, Ser. No. 192,525

Int. Cl. G02b *5/30*

U.S. Cl. 95—1 R 3 Claims

A calibrated neutral density filter has two polarizing filter members mounted in filter ring supports for rotation relative to one another. Indicia on the filter supports relate the degree of rotation of the two polarizing filter members relative to each other as a function of *f*:stop. An outer concentric ring mounted for rotation over the filter support has indicia printed thereon corresponding to *f*:stop graduations on the filter support. A reference point on the filter support indicates the

f:stop correction necessary because of reduction of intensity of light through the two polarizing filter members. Setting of a predetermined *f*:stop reading on the concentric ring to the



reference point indicates the corrected *f*:stop reading for the camera for any degree of rotation of the polarizing filters relative to each other.

3,732,794

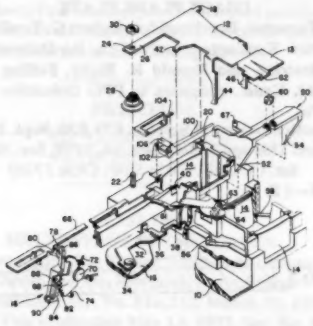
CAMERA BODY RELEASE LEVER MECHANISM

David E. Beach, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,142

Int. Cl. G03b *15/04, 17/20*

U.S. Cl. 95—11 L **6 Claims**



A camera includes an exposure mechanism and a member movable to sense the existence or non-existence of a predetermined camera condition. A shutter release button is movable to operate the exposure mechanism. The shutter release button is interconnected with the sensing member by a rocker member which amplifies the shutter release button's movement to minimize the travel of the button necessary to operate the sensing member. Means are provided for adjusting the sequence of operation of the exposure mechanism and the sensing member.

3,732,795

ELECTRIC CELL CASE FOR USE IN CAMERA

Susumu Fukuda, and Takehiko Kakei, both of Hyogo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

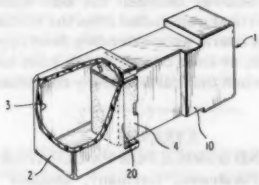
Filed Oct. 22, 1970, Ser. No. 83,048

Claims priority, application Japan, Oct. 22, 1969, 44/100534

Int. Cl. G03b *19/02*

U.S. Cl. 95—11 R **6 Claims**

An electric cell case is used in a still camera having a slide case with a case body secured to one side of the camera body facing the slide case and a cover hinged to the case body. The cover is adapted to open and close within the slide case for



quick replacement of cells, opening with a finger by releasing a snap latch, and is closed automatically by returning the slide case to a fit-in position relative to the camera body.

3,732,796

LINE TRACING SYSTEMS USING LASER ENERGY FOR EXPOSING PHOTO-SENSITIVE SUBSTRATES

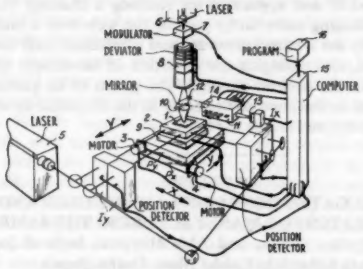
Raymond Marcy, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation-in-part of Ser. No. 5,619, Jan. 26, 1970, Pat. No. 3,632,205. This application July 8, 1971, Ser. No. 160,725

Claims priority, application France, July 9, 1970, 7025559; Aug. 14, 1970, 7030040

Int. Cl. G03b

U.S. Cl. 95—12 **9 Claims**



The invention relates to systems for automatically tracing onto a photo-sensitive substrate various patterns such as used in the manufacture of integrated circuits. The system according to the invention comprise means for displacing the substrate along two mutually perpendicular directions, means for controlling said displacements in relation to a program supplied from a computer and as a function of monitoring signals supplied from position detection means; the laser tracing beam is digitally deviated along a line parallel to one of said directions and under the control of the substrate motion along said other direction.

3,732,797

DIAPHRAGM DEVICE FOR A CAMERA

Tomoshi Takigawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1970, Ser. No. 103,027

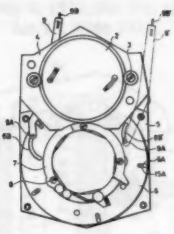
Claims priority, application Japan, Jan. 9, 1970, 45/3255; Jan. 9, 1970, 45/3256

Int. Cl. G03b *9/02*

U.S. Cl. 95—64 R **5 Claims**

In the disclosed diaphragm assembly, a diaphragm control ring that moves to open and close the diaphragm blades, forms several cam grooves. Each groove is capable of receiving an

indicator extension. In this way the diaphragm assembly is adapted to operate with various types of cameras having different diaphragm indicator mechanisms. Each groove engages the mechanism which extends toward that groove.

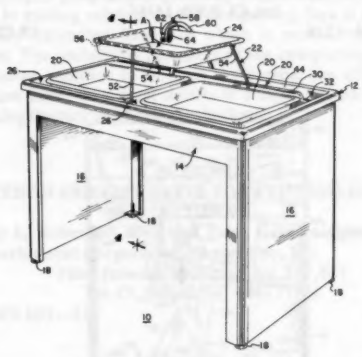


3,732,798

PHOTOGRAPHIC DEVELOPING SINK

Charles J. Leonhart, Carol Stream, and Johnny Larsen, Chicago, both of Ill., assignors to The Nuarc Company, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,661
Int. Cl. G03g 3/00
U.S. Cl. 95—89 **7 Claims**



A photographic developing sink comprising an integrally molded sink top having a recess formed therein for holding a quantity of liquid and tray support means formed in the recess for holding at least one film developing tray in contact with the liquid contained therein. A drain and dump trough is formed in the sink adjacent one side of the recess for receiving any liquid dumped from the tray and from said recess. Dam and spillway means is provided between the recess and drain for regulating the upper level of liquid in the recess and liquid supply means is provided for introducing liquid into the recess to flow into contact with the tray and over the spillway into the trough.

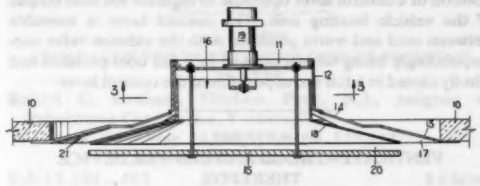
3,732,799

AIR CONDITIONING TERMINAL UNITS

Hendrik J. Spoormaker, Pretoria, Republic of South Africa, assignor to Anlibema (Proprietary) Ltd., Pretoria, Transmeal, Republic of South Africa

Continuation of Ser. No. 809,916, March 24, 1969, abandoned. This application June 11, 1971, Ser. No. 152,432
Int. Cl. F24f 13/06
U.S. Cl. 98—38 **8 Claims**

Conditioned air is supplied through a terminal unit mounted in a ceiling with a ceiling space above it. The unit is arranged to cause air in the space to be induced through the discharge aperture in the ceiling in variable amounts by the flow of conditioned air through the aperture.

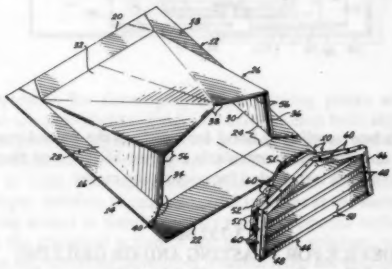


3,732,800

VENTILATION LOUVER GRILLS

Robert J. Goettel, 7824 North 36th Drive, Phoenix, Ariz.

Filed Aug. 13, 1970, Ser. No. 63,393
Int. Cl. F24f 7/00
U.S. Cl. 92—42 **4 Claims**



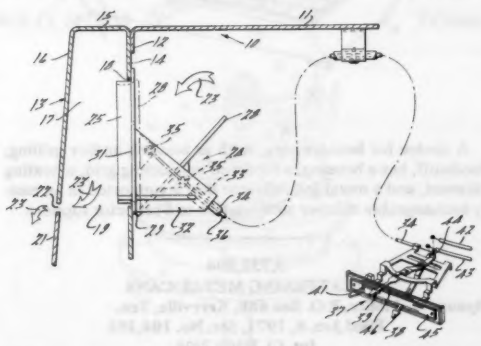
Ventilation louver grills are disclosed in which a frame is provided with one half of a friction lock mechanism formed adjacent to an air flow opening, and the other half of the friction lock mechanism is formed on a louver means so that the louvers may be easily assembled to the frame.

3,732,801

VEHICLE PASSENGER COMPARTMENT PRESSURE RELIEF SYSTEM

Stanley B. Wallis, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 19, 1971, Ser. No. 163,860
Int. Cl. B60h 1/24
U.S. Cl. 98—2.05 **2 Claims**



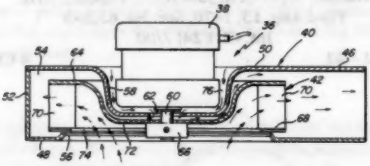
A vehicle passenger compartment pressure relief system comprising a valve controlled discharge outlet in a body panel

through which air may be exhausted to the atmosphere. The opened or closed position of the valve is correlated with the position of a control lever operable to regulate the heat output of the vehicle heating unit. The control lever is movable between cool and warm positions with the exhaust valve correspondingly being wholly opened in a full cool position and wholly closed in a full warm position of the control lever.

3,732,802
VENTILATING HOOD AND BLOWER DEVICE THEREFOR

Dezso S. Kristof, Orefield, Pa., assignor to Caloric Corporation, Topton, Pa.

Filed Mar. 18, 1971, Ser. No. 125,750
Int. Cl. F23j *11/00*
U.S. Cl. 98—115 K **4 Claims**

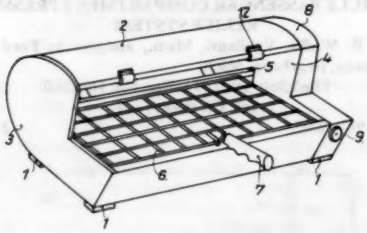


A kitchen ventilating hood for handling the forced circulation of air and more particularly a motor-blower unit therefor wherein means is provided for cooling the motor.

3,732,803
DEVICE FOR TOASTING AND/OR GRILLING

Heinrich-Julius Buxmann, Steinbach/Taunus, Germany, assignor to Braun A.G., Frankfurt/Main, Germany

Filed Feb. 8, 1971, Ser. No. 113,372
Claims priority, application Luxembourg, Feb. 17, 1970, 60362
Int. Cl. A47j *37/08*
U.S. Cl. 99—357 **14 Claims**



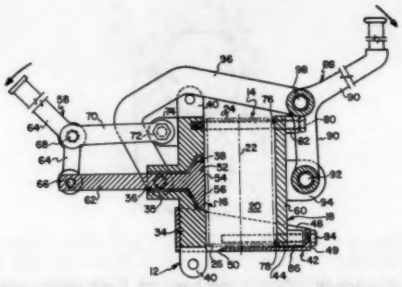
A device for heat-treating, such as toasting and/or grilling, foodstuff, has a housing, a foodstuff supporting grid, a heating element, and a metal foil reflector that is supported in an easily exchangeable manner with relation to a reflector support.

3,732,804
FLATTENING METAL CANS

Bynum W. Moller, P.O. Box 688, Kerrville, Tex.

Filed Jan. 6, 1971, Ser. No. 104,266
Int. Cl. B30b *7/04*
U.S. Cl. 100—42 **8 Claims**

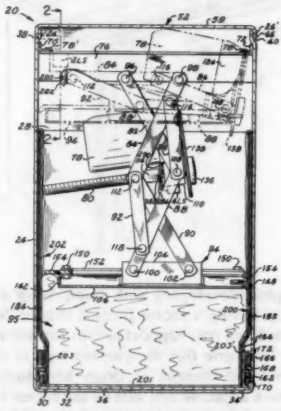
A method and apparatus for flattening thin metal cans is disclosed wherein the can is first creased or notched to incline the can ends with respect to the can axis and each can end is then folded about an axis adjacent the juncture of the respective can end and the can side into a generally flat configuration.



3,732,805
REFUSE COMPACTOR

Jerry W. Moon, 2735 Alveston, Bloomfield Hills, Mich.

Division of Ser. No. 148,879, June 1, 1971. This application Nov. 24, 1971, Ser. No. 201,928
Int. Cl. B30b *15/66*
U.S. Cl. 100—226 **18 Claims**

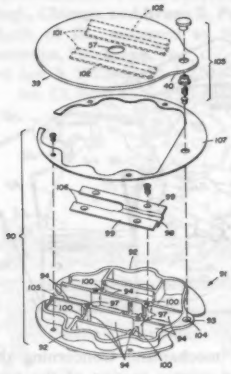


A refuse compactor including a receptacle removably contained within a cabine t wherein refuse is compacted by a ram to a fraction of its normal volume. The refuse is compacted within a psecialIly constructed bag supported by the receptacle and cabinet, permitting the compacted refuse to be removed as a wrapped package for convenient and tidy disposal. The ram includes a refuse-compressing platen actuated through a toggle linkage to which force is applied by a single screw driven by an electric motor coupled to the screw through a reduction drive. The screw and its motor drive train are carried as a unit by the toggle linkage and move bodily therewith to provide a very compact and high ratio force multiplication system of reliable and inexpensive construction. Additional features relating to control circuitry, a safety lock, and bag, receptacle and drawer construction are also disclosed.

3,732,806
RAM HEAD FOR TRASH COMPACTOR

Joseph F. Bourgeois, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed July 6, 1971, Ser. No. 159,762
Int. Cl. B30b *15/06*
U.S. Cl. 100—295 4 Claims

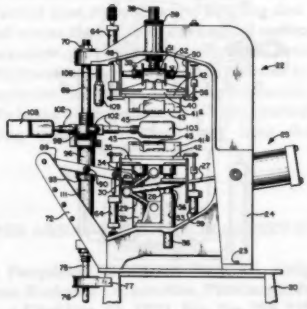


A removable ram head for a trash compactor employs an integral casting having a flat compacting face with an undulating or scalloped periphery of generally overall circular configuration. In trailing relation to the compacting face is a circular, laterally extending flange to which is secured an annular gasket. The undulating periphery of the compacting face and the flange combine to increase the compacting efficiency of the ram head. Structural details of a trash compactor incorporating the ram head are also disclosed.

3,732,807
METHOD AND APPARATUS FOR PRINTING HOLLOW ARTICLES

Elmer L. Robertson, Overland Park, Kans., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed June 28, 1971, Ser. No. 157,401
Int. Cl. B44c *1/14*; B41f *17/24*
U.S. Cl. 101—11 15 Claims

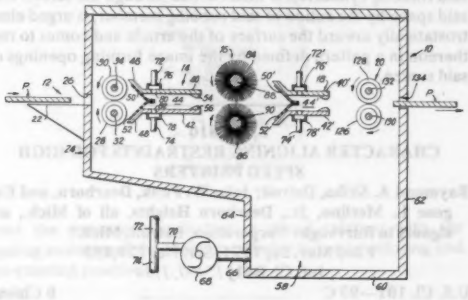


A process and apparatus for hot stamp printing of hollow articles, particularly plastic containers, utilizing pigment coated films or foils. The apparatus uses a split die holder which contains one or more heated elements providing the indicia desired to be printed on the exterior surface of the plastic container. One-half of the die holder is fixedly positioned, and the second half of the die holder is adapted to be raised into position to enclose the hollow plastic container within the die cavity which has the same shape as the container being printed. A mechanical indexing source is utilized to move the bottle into the split die holder, and a single pneumatic source is utilized to close the split die holder around the bottle.

3,732,808
APPARATUS FOR DEVELOPING OFFSET PRINTING PLATES

Robert C. Graham, Florham Park, N.J., assignor to Polychrome Corporation, Yonkers, N.Y.

Filed Mar. 18, 1971, Ser. No. 125,612
Int. Cl. B41m *5/00*
U.S. Cl. 101—463 8 Claims

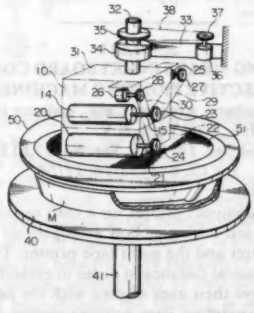


Apparatus for developing offset printing plates wherein means are provided to simultaneously develop both sides of a two surface planographic offset printing plate or one surface of two single surface planographic offset printing plates placed back to back. The apparatus includes means for dispensing developer solution to opposed plate surfaces at the same time, rubbing means to simultaneously rub the opposed surfaces to assist the chemical action of the developer solution, washing means for removing developer solution from the opposed surfaces and propelling means for moving the plate or plates through the apparatus. The developer solution dispenser supplies developer solution at a uniform hydraulic pressure over the full surface area of the offset printing plate without the use of spray nozzles.

3,732,809
ELECTROSTATIC PRINTING APPARATUS FOR PRINTING ON CURVED SURFACES

Hiroomi Sawada, and Shigekazu Shimazawa, both of Tokyo, Japan, assignors to Nippon Denshi Insatsuki Kabushiki Kaisha, Chuo-ky, Tokyo, Japan

Filed Nov. 10, 1971, Ser. No. 197,211
Claims priority, application Japan, Nov. 13, 1970, 45/99732; Dec. 2, 1970, 45/105896
Int. Cl. B41f *17/18*
U.S. Cl. 101—35 7 Claims



An apparatus for electrostatically printing on the curved surface of an article, in which the article securely held on a

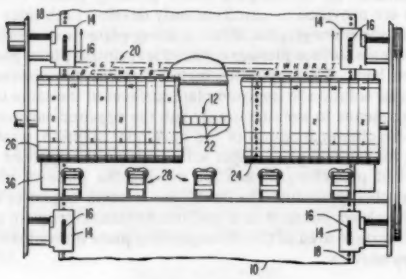
supporting member is set in such a position that its surface to be printed is located in close proximity of an image forming screen in evenly spaced opposed relation thereto thereby defining a predetermined space therebetween, and a powder feeding box containing a finely divided electroscopic ink powder therein and having a rotatable cylindrical brush mounted therein and further carrying a rubbing member rotated about a vertical shaft with said rubbing member in contact with said screen, while establishing an electrostatic field in said space, whereby the ink powder flows from said feeding box onto the surface of the rubbing member through a slit formed at the bottom of said feeding box by the action of said rotating cylindrical is then rubbed through the screen into said space by the action of said rubbing member, is urged electrostatically toward the surface of the article and comes to rest thereon in a pattern defined by the image forming openings of said screen.

3,732,810

CHARACTER ALIGNING RESTRAINTS FOR HIGH SPEED PRINTERS

Raymond A. Skiba, Detroit; John W. Funk, Dearborn, and Eugene L. Merlino, Jr., Dearborn Heights, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 31, 1971, Ser. No. 129,853
Int. Cl. B41j *15/00, 1/34*
U.S. Cl. 101—93 C **8 Claims**



Printing apparatus wherein a webbed medium is intermittently fed from print line to print line between a row of actuatable print hammers and a continuously displacing set of print characters. Between intermittent advances the webbed medium is impacted by selected ones of the print hammers to print a line thereupon, such impact being effective to engage the impacted area of the webbed medium with the continuously moving print characters, thus urging the webbed medium out of a predetermined alignment with the print hammers. Restraining means prevents such shiftable movement by immobilizing the webbed medium in opposition to the undesirable influence of the moving print characters.

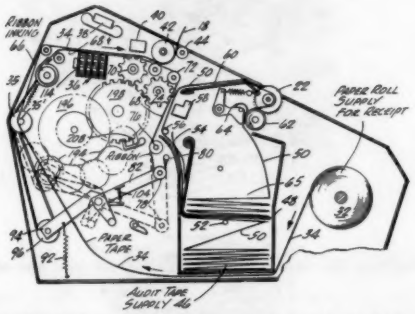
3,732,811

RIBBON INKING MEANS IN KEYBOARD CONTROLLED SELECTIVE PRINTING MACHINES

Kenneth F. Oldenburg, Arcadia, Calif., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,812
Int. Cl. B41j *33/16, 31/14*
U.S. Cl. 101—96 **5 Claims**

A simple and compact printer for a cash register or the like includes a long self-inking ribbon arrangement for both the receipt tape printer and the audit tape printer. The ribbon extends for a substantial distance in order to extend past the date wheels which have their axes aligned with the path of the ribbon, past the transaction item printing station and also past the audit printing station. The ribbon actuating mechanism is provided with a lost-motion arrangement whereby ribbon tension is released immediately prior to hammer action to avoid background smudge. Fan fold type paper is employed for the audit tape, and is fed from a supply box to the audit tape printer and then back to storage immediately above the supply box. The alignment of the axes of the date wheels parallel to the ribbon feed and to the side of the machine permits easy changing of dates by the operator without the need for a com-



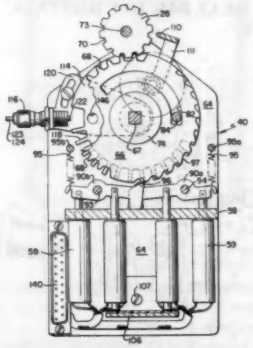
plex mechanical mechanism. Concerning the physical arrangement of the printer section of the cash register, the supply roll of paper for receipts is located near the keyboard at the end of the cash register toward the clerk. The tape from this roll extends under the fan fold from the ribbon and other print mechanisms, along the bottom and rear of the cash register to the print station located in the upper portion of the cash register.

3,732,812

DIFFERENTIALLY POSITIONABLE TYPE WHEELS IN REMOTELY CONTROLLED PRINT MODULES

David F. Bremner, Bellbrook, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 4, 1971, Ser. No. 120,934
Int. Cl. B41j *7/48, 1/46*
U.S. Cl. 101—99 **8 Claims**



A remotely-controlled print module for use in printing labels or the like wherein a plurality of differential gears are aligned on a common drive shaft and oscillatably driven to a predetermined position controllable by selective indexing means, the gears meshing with typewheels carried on a shaft parallel to the drive shaft. The gears are independent of each other and are friction driven by means of spring elements for friction loading thereof, wherein during a cycle of operation, the gears are stopped at predetermined positions by means of indexing pawls which are selectively energized through electromagnetic solenoids, the stopped position of the typewheels

being compatible for striking by print hammers. The differential gear line-up includes an additional gear and read means for sensing positions of the gears and the typewheels and relaying pulses for commutation effect to a remote computer which directs control of the module printing.

3,732,813

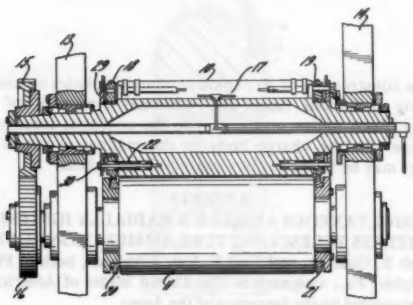
BEARER ARRANGEMENT FOR PRINTING PRESS

Mahendra Vir Singh, Chicago, and Bruno B. Pasquinelli, Evergreen Park, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1972, Ser. No. 214,945

Int. Cl. B41f *5/00, 13/24*

U.S. Cl. 101—216 **8 Claims**



Cooperating bearers for the printing and impression cylinders in a printing press are provided with oppositely inclined conical surfaces on the peripheries thereof, and the bearers on one of the cylinders are mounted for axial movement so that the conical surfaces of the bearers can be maintained in engagement with each other upon adjustment of the distance between the axes of the two cylinders. Biasing means in the form of hydraulic cylinders continuously urge the movable bearers in an axial direction so as to press the conical surfaces of the cooperating bearers together. Second biasing means in the form of springs urge the movable bearers in the opposite direction for separating the conical surfaces when the hydraulic cylinders are de-actuated. The conical surface of at least one of each pair of cooperating bearers is formed with a curve that is convex relative to the opposed conical bearer surface so that the two surfaces engage each other only along a narrow circumferential area so as to avoid scuffing due to a velocity differential across the width of the conical surfaces. A control system actuates the hydraulic cylinders automatically in response to movement of the printing cylinder toward the impression cylinder, and de-actuates the hydraulic cylinders automatically in the absence of a sheet to be printed, and prior to the printing cylinder tripping away from the impression cylinder.

3,732,814

BEARER ARRANGEMENT FOR OFFSET PRINTING PRESS

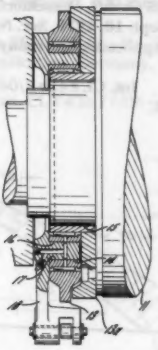
Bruno B. Pasquinelli, Evergreen Park, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1971, Ser. No. 208,229

Int. Cl. B41f *7/02, 13/20*

U.S. Cl. 101—218 **7 Claims**

The blanket cylinder of an offset printing press is provided with a bearer at each end thereof, each of which is mounted on an adjustable eccentric ring for movement radially relative to the blanket cylinder so that positive contact will be maintained with coacting bearers on the impression cylinder when the spacing between said cylinders is varied to accommodate changes in the thickness of the stock to be printed. Pneumatic cylinders are provided for adjusting the angular position of the eccentric rings to thereby shift the radial position of the blanket cylinder bearers, and control means activate and deactivate the pneumatic cylinders in timed relation with the tripping motions of the blanket cylinder between printing and non-printing positions.



3,732,815

DRIVE ARRANGEMENT FOR PERFECTING LITHOGRAPH PRESS UNIT

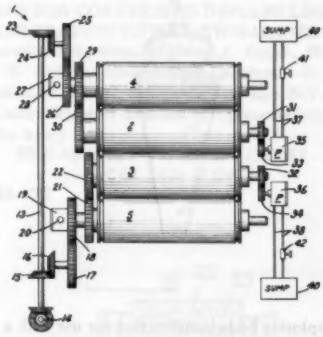
Harry M. Greiner, Offenbach/Main, and Hartwig Banfer, Muhlheim/Main, both of Germany, assignors to Roland land Offsetmaschinenfabrik Faber & Schleicher AG., Offenbach/Main, Germany

Filed Mar. 19, 1971, Ser. No. 125,935

Claims priority, application Germany, Mar. 26, 1970, P 20 14 753.9

Int. Cl. B41f *5/04*

U.S. Cl. 101—220 **3 Claims**



A lithograph press in which a web is simultaneously printed on both sides by passing the web between a pair of blanket cylinders, the blanket cylinders being gear driven from associated plate cylinders and the plate cylinders being coupled to a common drive shaft. An auxiliary torque loading is applied, by means of brakes, to the blanket cylinders, thereby to minimize the effect of transient changes in loading which tend to occur within the rotative cycle because of the tendency of one blanket cylinder momentarily to over-drive the other. In the disclosed embodiment the braking is accomplished by means of loaded hydraulic pumps coupled to the respective blanket cylinders.

3,732,816

HOLLOW CHARGE WITH AN INSERT OF PROGRESSIVE OR DEGRESSIVE WALL

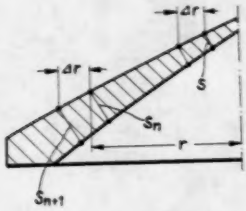
Helmut Muller, Rhynern-Kump, Germany, assignor to Firma Rheinmetall GmbH, Dusseldorf, Germany

Filed Sept. 10, 1970, Ser. No. 71,091

Claims priority, application Germany, Sept. 17, 1969, P 19 46 959.1

Int. Cl. F42b 3/08

U.S. Cl. 102—24 HC 2 Claims



A hollow charge with an insert of progressive and degressive wall thickness, respectively, wherein the insert has at least partly curved generating lines. The oppositely disposed outer and inner generating lines of the insert have the same line course, yet are rotatably displaced relative to each other for a predetermined angle within a sectional plane.

3,732,817

EXPLOSIVE BODY CONSTRUCTION

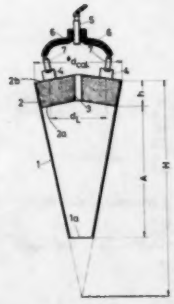
Franz R. Thomanek, Sandizell 38½, Landkreis Schrobenhausen, Germany

Filed Dec. 20, 1963, Ser. No. 332,995

Claims priority, application Germany, Jan. 24, 1963, B 70 464

Int. Cl. F42b 3/08

U.S. Cl. 102—24 HC 8 Claims



1. An explosive body construction for use with a hollow explosive charge having a cavity in the front in respect to the firing direction, comprising a frustoconically-shaped guiding sleeve having a smaller dimensioned end with an opening in said sleeve being adapted to be arranged before the hollow explosive charge in respect to the firing direction, said guiding sleeve having an apex angle of between 15° and 45°, a secondary charge enclosed by said guiding sleeve having a frontal area at an end thereof, the generatrix of said guiding sleeve forming an angle of between 90° and 100° with the frontal area of said secondary charge, and at least three primer charges arranged on said frontal area at substantially equal distances apart on a pitch circle concentric to the axis of said secondary charge, the diameter of said pitch circle amounting to between 70 and 90 percent of the maximum exterior diameter of said guiding sleeve.

3,732,818

HOLLOW-EXPLOSIVE CHARGE CONSTRUCTION

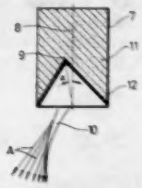
Franz Rudolf Thomanek, Sandizell 38 1/4, Landkreis Schrobenhausen/Upper Bavaria, Germany

Filed Sept. 7, 1965, Ser. No. 485,626

Claims priority, application Germany, Sept. 7, 1964, B 78 449

Int. Cl. F42b 1/02

U.S. Cl. 102—24 HC 3 Claims



The construction of an explosive charge includes means for causing deviations from the rotational symmetry of the charge. Such means may comprise the eccentric location of the liner for the charge body or the manner in which the charge may be burned or any combination of these.

3,732,819

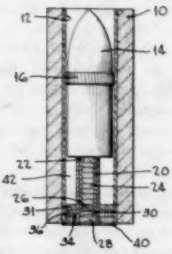
SIMULTANEOUS AXIALLY & RADIALLY IGNITED CASELESS TELESCOPIC TUBE AMMUNITION ROUND

Joseph B. Quinlan, and Earl F. Van Arstdalen, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed Mar. 23, 1971, Ser. No. 127,296

Int. Cl. F42b 5/16

U.S. Cl. 102—40 5 Claims



A caseless cartridge ammunition round occupying a minimum volume while yielding ballistic properties superior to comparable metal case rounds and comprising a completely telescopic projectile within a molded propellant cylinder, the round employing simultaneous radial and axial ignition.

3,732,820

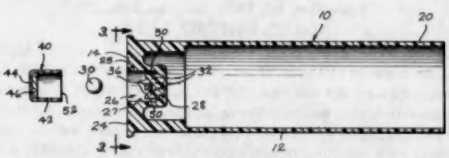
BALL ANVIL PRIMER

Grover E. Hendricks, 2885 N.E. 19th Street, Pompano Beach, Fla.

Continuation-in-part of Ser. No. 29,787, April 20, 1970, abandoned. This application June 28, 1971, Ser. No. 157,299

Int. Cl. F42b 5/36

U.S. Cl. 102—45 10 Claims



A primer including a support disposed within a cavity. The support carries a ball-like anvil over which is disposed an in-

verted cup-shaped primer cover. A primer powder charge is positioned between the primer cover and anvil and is detonatable upon the application of a percussive force to the primer cover.

3,732,821

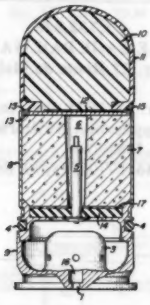
NOSE OGIVE FOR NONLETHAL PROJECTILE

Thurber W. Royer, Arcadia, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 25, 1971, Ser. No. 146,767

Int. Cl. F42b *9/20, 13/20*

U.S. Cl. 102—41 **9 Claims**



A munition assembly comprising a primer, propellant, fuze, chemical agents positioned in a cartridge case and projectile, said projectile fitted with a nondestructable polymeric impact-attenuating nose unit, said nose unit is designed to absorb the kinetic energy in the projectile to reducing the lethal potential of the projectile when fired and physically contacting personnel.

3,732,822

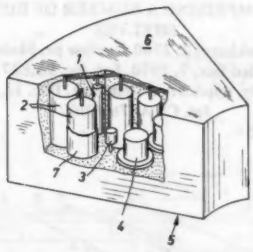
EXPLOSIVE ENCAPSULATED DEVICE

Franz Rudolf Thomanek, Sandizell 38 ¼, Landkreis, Schrobenhausen, upper Bavaria, Germany

Filed Jan. 12, 1966, Ser. No. 520,547

Int. Cl. F42b *1/00, 13/48*

U.S. Cl. 102—70.2 R **8 Claims**



An electrical structural unit comprises a plurality of electrical components which are arranged together in proper circuit orientation within a housing which is packed or filled around the electrical components with an insulating material which comprises an explsoive. A synthetic resin material is used to bound the explosive and in one embodiment the explosive is admixed with fillers such as a textile material, synthetic resins and glass fibers.

3,732,823

ELECTRICAL IGNITER OR FUSE

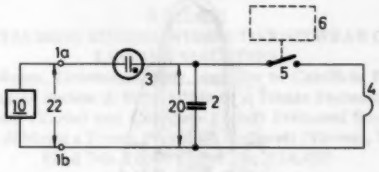
Manfred Held, Poettmes, and Johann Spies, Schlatzendorf/Pfahl, both of Germany, assignors to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed June 28, 1968, Ser. No. 741,142

Claims priority, application Germany, July 6, 1967, P 15 78 447.1

Int. Cl. F42b *11/06*

U.S. Cl. 102—70.2 R **8 Claims**



An electrical igniter or fuse includes an electrically energized igniting means, an energizing circuit therefore and a condenser connected in the energizing circuit and acting as an electrical energy storage means. Normally open switch means are in series in the energizing circuit and are closed at a preselected time to discharge the condenser through the igniting means. A charging circuit for the condenser includes disengageable contacts for temporary connection to an extraneous source of potential to charge the condenser, and a spark gap switching means is interposed in the charging circuit between the condenser and the disengageable contacts. The extraneous source of potential has a potential higher than the firing potential of the glow tube constituting the spark gap switching means, and the condenser is charged to a potential lower than such firing potential. Thereby, when the contacts are disengaged from the potential source, shorting of the contacts will not effect discharge of the condenser.

3,732,824

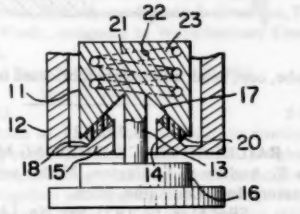
MEANS FOR CONVERTING IMPULSE LINEAR ACCELERATION TO ROTATIONAL INERTIA

Issai Lefkowitz, Princeton; William J. Ralph, Willingboro; Donald R. Lenton, Haddonfield; Benjamin D. Nabreski, Pennsauken, all of N.J., and David Fox, Rye, N.Y., assignors to The United States of America as represented by the Secretary of the Army

Filed Apr. 28, 1971, Ser. No. 138,052

Int. Cl. F42c *15/24*

U.S. Cl. 102—78 **6 Claims**



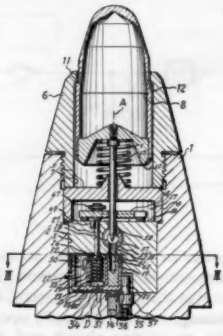
A projectile timing fuze arrangement in which a rotatable arming element is driven by a rotor that contains fluid within a forward end of an internal spiral groove thereof, such that upon the rotor being subjected to impulse linear acceleration, rotational motion will be imparted to the rotor.

3,732,825

IMPACT FUZE FOR A SPIN STABILIZED PROJECTILE

Robert Apotheloz, 8304 Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon Buhrle AG, Zurich, Switzerland

Filed June 22, 1971, Ser. No. 155,480
Claims priority, application Switzerland, June 26, 1970, 9684/70
Int. Cl. F42c 15/26
U.S. Cl. 102—80 4 Claims



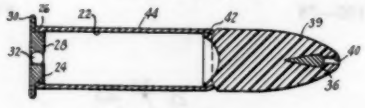
An impact fuze for a spin stabilized projectile of the type comprising a carrier for a detonator pellet, rotatable by spring means from a safe into an armed position, and a safety device in the form of an axially movable safety stud. The safety stud in a forward position locks the pellet carried in the safe position. The stud is displaceable by the acceleration on discharge of the projectile into a rear position in which it releases the carrier. The pellet carrier is positioned so that the centrifugal force acting on its center of gravity will oppose the inertial force due to spin acceleration. Thus the frictional forces arising between the pellet carrier and the safety stud is limited to prevent the stud jamming and preventing the fuze from being armed.

3,732,826

CARTRIDGE

Elmer W. Johnson, 451 E. 9th Avenue, Chico, Calif.

Filed Apr. 9, 1971, Ser. No. 132,694
Int. Cl. F42b 5/22
U.S. Cl. 102—92.7 1 Claim



A tube, cap, head, and weight fabricated to form a bullet.

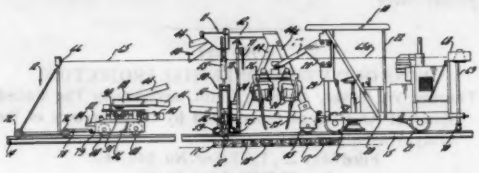
3,732,827

RAILROAD TRACK WORKING MACHINE

James E. Anderson, Ludington, Mich., assignor to Jackson Vibrators, Inc., Ludington, Mich.

Filed Mar. 17, 1971, Ser. No. 125,116
Int. Cl. E01b 33/02, 27/17, 29/04
U.S. Cl. 104—7 R 10 Claims

A track working machine having a unitized construction including a tamper carriage and a track lifting attachment with a truss constructed frame carrying jacks intermediate the ends of the frame. The track lifting attachment includes means for automatically moving the forward end of the truss frame in a lateral direction relative to the track wheels upon which it is supported so as to maintain the jacks in a vertically centered position over the track rails and thereby enable the machine to work relatively sharp curved sections of track without the jacks exerting side pull on the rails.

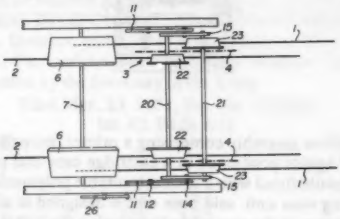


3,732,828

VARIABLE GAGE RAILWAY TRUCK

Maurice Paul Wanner, 27 Route de Malagnou, 1268 Geneva, Switzerland

Filed Mar. 12, 1971, Ser. No. 123,572
Claims priority, application Switzerland, Mar. 17, 1970, 4041/70; Nov. 6, 1970, 16889/70
Int. Cl. B61f 7/00, 13/00; B61k 5/00
U.S. Cl. 104—33 12 Claims



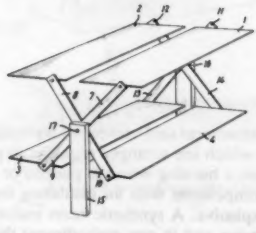
To enable a railway vehicle to pass from a narrower track to a wider track and vice versa, the vehicle is provided with carrier, preferably flangeless, wheels which can roll without adaptation on either of the two tracks and with guide means having flanged members, e.g. flanged wheels, which can be made to engage the rails of either track in a change-over section where the two tracks meet, this section being preferably provided with means enabling the flanged members to be adapted automatically from one track to the other.

3,732,829

DEVICE COMPRISING A NUMBER OF ROTATABLE SHELVES

Mogens Bech, Bakkevej 2, 2760 Ganlose pr. Malov, Denmark

Filed Dec. 7, 1970, Ser. No. 95,827
Claims priority, application Denmark, Dec. 12, 1969, 6599
Int. Cl. A47b 49/00
U.S. Cl. 108—95 11 Claims



A device comprising a number of rotatable shelves which are suspended between two shelf carrying members in a

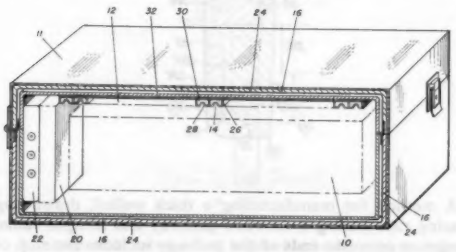
manner so as to be kept horizontal during rotation, said shelf carrying members being rotatable in parallel, vertical planes around axes extending spaced apart from each other at the same height above a horizontal plane. Each of the shelves are provided at opposite sides thereof with shelf supports, the axes of which are separated by a distance equal to the distance between the rotational axes of said shelf carrying members, said shelf supports being connected with one and the other of said two shelf carrying members, respectively.

3,732,830

SECURITY METHOD AND DEVICE

Charles I. Lindstedt, Jr., Morris, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 26, 1971, Ser. No. 202,341
Int. Cl. E05g 3/00
U.S. Cl. 109—36 **5 Claims**



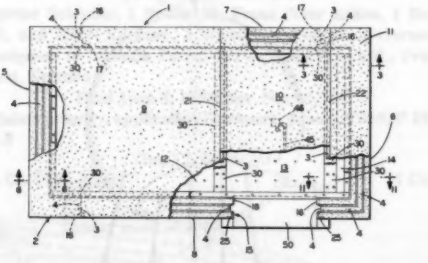
A method for insuring against an unauthorized access to confidential subject matter stowed in a container wherein said method comprises the steps of: juxtaposing sheets of multiple miniature shaped charges proximate to the confidential subject matter; sensing an unauthorized entry into said container; and detonating said shaped charges upon detection of such an unauthorized entry, whereby the confidential subject matter is destroyed by said detonation.

3,732,831

MODULAR CONCRETE VAULT STRUCTURE

John C. Marciniak, Canton, and William D. Burkey, Louisville, both of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed July 12, 1971, Ser. No. 161,630
Int. Cl. E04b 2/08
U.S. Cl. 109—83 **5 Claims**



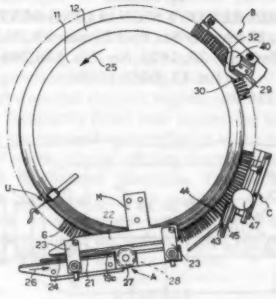
A modular security vault structure having a plurality of prefabricated concrete panels forming the vault side, ceiling and floor walls. Some of the panels have integral corners. The panels are formed with tongues and grooves for tongue and groove joint connection between adjacent panels. Spaced rows or layers of reinforcing bar grids are embedded within the panels. The ends of the bar grids extend into the tongues and into the panels on either side of the grooves so as to overlap at each tongue and groove joint. Plates cover the joint lines between panels on the inner vault surfaces. The plates are bolted to sockets embedded within the panels and connected with the bar grids. Vertical panel joints in the vault side walls are offset from horizontal joints in the vault ceiling and floor walls. A usual vault door may be hung in a wall of the modular vault structure. Lighting, alarm and ventilating requirement conduits, offset at least once, may be embedded in the prefabricated panels so that any vault structure can be erected completely and quickly at the bank site.

3,732,832

ATTACHING BINDING STRIPS TO KNITWEAR ON LINKING MACHINES

Pietro Rosso, Orbassano, Italy, assignor to Calzificio Fratelli Protasoni Societe di fatto di Mario e Trento Protasoni, Orbassano (Turin) and Calzificio Fretelli Protasoni Societe di fatto di Mario e Trento Protasoni, Gallarate (Varese), Italy

Filed Feb. 11, 1971, Ser. No. 114,450
Int. Cl. D05b 7/00
U.S. Cl. 112—25 **19 Claims**



In order to allow the so called "casual" impaling of the edges of the binding strip and of the knit-wear article on the points of the rotary dial of a linking machine, the strip is formed at its opposite longitudinal edges with tabs which are superimposed on the inner face of the binding strip before the latter is bent to channel shape. Thicker end portions are formed on the free longitudinal edges of said tabs in order to permit semi-automatic impaling of the binding strip onto the points using guides provided with through slots directed towards the annular path of the points. A further guide allowing a semi-automatic impaling of the article edge to be sewn to the binding strip, may be also provided.

3,732,833

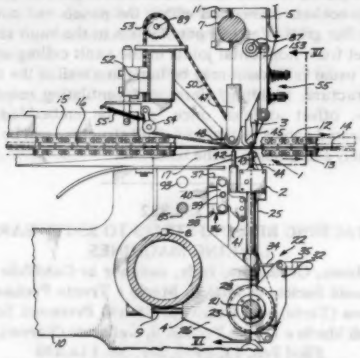
STITCHING UNITIZER

Byron B. Brookhyser, Milton, and Harold E. Erickson, Federal Way, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed June 7, 1971, Ser. No. 150,494
Int. Cl. B42b 1/02
U.S. Cl. 112—203 **5 Claims**

A sewing machine which has the capability to continuously stitch a traveling relatively hard material with a tight chain stitch utilizes a reciprocating sewing head, and a reciprocating thread thrower, together with appropriate stitching conveyors. Continuously moving material is fed into a sewing station by upper and lower stitching conveyors such that as the material passes through the stitching station, it is generally in a horizontal flat plane. At the stitching station, individual holes are continuously punched and a vertically and axially reciprocating needle then enters the hole and has a thread loop positioned thereon. As the needle travels downwardly while at the same time moving axially carrying the thread loop with it, it will

travel through a previously picked off thread loop which is waiting on a looper mechanism. The stitching cycle is continu-



ously repeated and this action establishes a straight stitched thread line comprised of individual chain stitches.

3,732,834

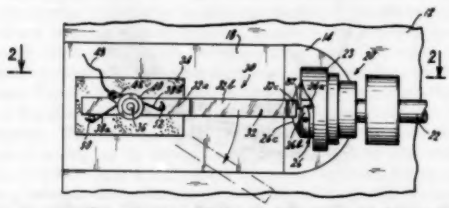
BOBBIN RUNOUT SIGNALLING DEVICE

Nathan Mayer, 27 Messler St., East Brunswick, N.J.

Filed Apr. 23, 1971, Ser. No. 136,706

Int. Cl. D05b *69/36*

U.S. Cl. 112—219 R **7 Claims**



A monitoring device for the bobbin mechanism or assembly of a conventional sewing machine which provides a sensing or control signal in response to the imminent runout of the supply of bobbin thread and disrupts stitching with an adequate tail of bobbin thread to avoid loss of the stitch and operation of the sewing machine without a supply of bobbin thread.

3,732,835

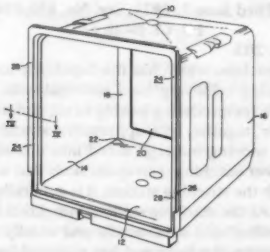
DISHWASHER TUB GASKET SURFACE AND METHOD OF MAKING SAME

Olan L. Long, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1971, Ser. No. 141,685

Int. Cl. B21d *51/18*

U.S. Cl. 113—120 M **2 Claims**



A relatively smooth seating surface for a gasket for a dishwasher tube formed by an expanding process is made by displacing the material forming the seating surface sufficiently from its original position established by the expanding step that the wrinkles and irregularities formed during the expanding process are merged into the smooth surface.

3,732,836

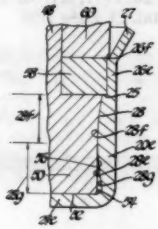
METHOD OF MANUFACTURING DRAWN CUP BEARING RACES WITH CROWNED PATHWAYS

Edward W. Molloy, Port Clinton, Ohio, and Charles K. Williams, Point Pleasant, N.J., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 17, 1971, Ser. No. 181,427

Int. Cl. B21d *53/12*

U.S. Cl. 113—117 **7 Claims**



A method for manufacturing a thick walled, drawn cup bearing race having a crowned pathway and integral radial flanges at opposite ends of the pathway includes the step of drawing an open ended cup in such a manner that the side wall of the cup increases in thickness from the corner of the cup toward its open end. This increasing thickness is taken advantage of to provide the inner half of the crowned pathway. The outer half of the crowned pathway at the open end of the cup is produced by reforming the cup with a punch having a concavely tapered forming surface. The radial flange at the open end of the cup is preferably formed without any internal support to further accentuate the crown on the pathway.

3,732,837

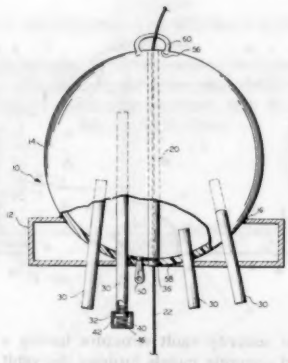
AUTOMATIC SALVAGE BAG FOR UNDERWATER USE

Keith A. Hogan, 2226 Howard Street, Omaha, Nebr.

Filed Aug. 30, 1971, Ser. No. 178,524

Int. Cl. B63b *35/00*

U.S. Cl. 114—.5 R **6 Claims**

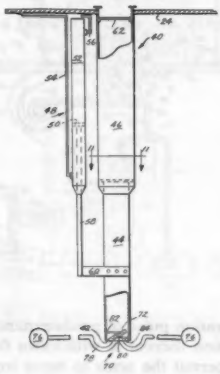


An improved salvage bag for underwater or undersea use, being specially designed to assist scuba divers, deep-sea divers, or sport scuba divers undertaking the salvaging of small items of treasure from the bottom of lakes, rivers or seas.

3,732,838
SUBMERSIBLE SALVAGE UNIT AND METHOD OF OPERATION

Frederick A. Kriedt, 1722 East West Hwy., Silver Spring, Md.; Thomas H. Sundstrom, 7706 Nicollet Avenue S., Bloomington, Minn., and Richard Walko, 15913 Martin Road, Roseville, Mich.

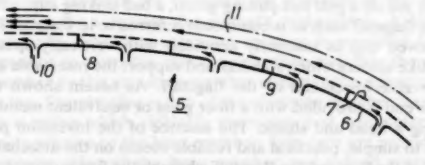
Division of Ser. No. 765,897, Oct. 8, 1968. This application Aug. 26, 1970, Ser. No. 67,263
Int. Cl. B63g 8/22
U.S. Cl. 114—16 E 9 Claims



A submersible salvage unit is provided with a support frame which carries opposed pairs of downwardly depending arms for grasping a sunken vessel or other object. The arms can be actuated from grasping to inoperative positions by relative vertical movements of pontoons which are also carried by the support frame of the unit. The relative movements are effected by movement of either the pontoons or the support frame relative to the other. Buoyancy compensators are provided in the salvage unit to adjust buoyancies to match loads which are to be lifted, and the buoyancy compensators include means for rapidly releasing buoyancy gas from the pontoons, if necessary. Also, buoyancy compensators on opposite sides of the salvage unit may include stabilizers which relate the compensators to each other in their operations to maintain stable attitudes of the salvage unit when it is lifting a load. A method of operation provides for an alignment and sinking of the salvage unit over a sunken vessel, and engagement of the vessel is accomplished by adjusting buoyancies of the entire salvage unit.

3,732,839
FRICTION REDUCER

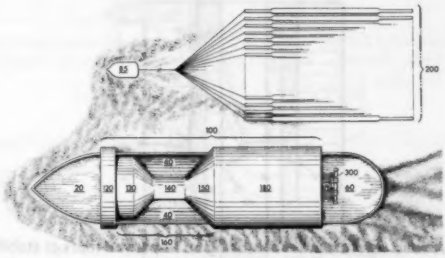
Siegfried Schuster, 1 Berlin 38; Franz Peter Kilian, 1 Berlin 31, and Horst Rachner, 2 Wedel/Holstein, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed June 8, 1970, Ser. No. 44,255
Claims priority, application Germany, June 6, 1969, P 19 28 869.8
Int. Cl. B63b 1/34
U.S. Cl. 114—67 R 1 Claim

The outer skin of a water vehicle such as a boat is provided with openings through which additives can be continuously emitted to reduce boundary layer drag on the vehicle.

3,732,840
SHIP SECTIONS ADADPTED FOR DISASSEMBLY AND RE-ASSEMBLY AT SEA

Ernest B. Dane, Jr., 57 Tyler Road, Belmont, Mass.

Continuation of Ser. No. 754,191, Aug. 21, 1968, abandoned. This application Dec. 14, 1970, Ser. No. 97,484
Int. Cl. B63b 3/02
U.S. Cl. 114—77 R 8 Claims

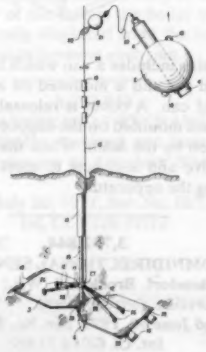


Streamlining and powered sections for improving the mobility and strength of certain special purpose ships, and adapted for disassembly at sea and re-assembly into a powered auxiliary vessel. Bow, midships and powered stern sections affording streamlining and strength giving features and with internal configurations conforming with those of corresponding portions of the special ship are registered therewith, inflatable tubes being compactly fitted near registering surfaces. At sea, the sections are released upon inflation of the tubes and disengagement of quick release catches thereby freeing the ship to perform its specialized function. The sections are subsequently re-combined into an auxiliary powered vessel by drawing them into alignment with the aid of winch-actuated cables and spring lines, the fending tubes being deflated as the sections are merged for rigid connection.

3,732,841
EXPLOSIVELY EMBEDDED ANCHOR

Henry C. Mayo, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army

Filed Mar. 26, 1971, Ser. No. 128,299
Int. Cl. B63b 21/28
U.S. Cl. 114—206 A 2 Claims



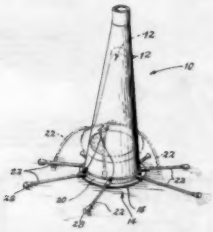
The disclosed invention is an explosively embedded anchor assembly for use in all types of ocean bottom and in all water depths. The anchor assembly has a shaped charge explosive for producing a hole in a rock ocean floor, a projectile anchor for embedding in all ocean floors, and a pro-jectile gun for explosively embedding the anchor. The assembly is provided with bottom-contact detonating means which permits automatic firing of the shaped charge and the anchor, and with a buoyant reaction vessel affixed to the projectile gun to permit automatic recovery of the gun.

3,732,842

ROAD SAFETY DEVICE AND ACCESSORIES

Arthur G. Vara, Sr., 115 Westview Avenue, Hamburg, N.Y.

Filed May 10, 1971, Ser. No. 141,729
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **23 Claims**



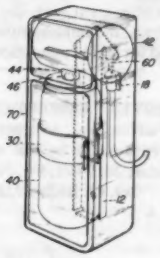
A road safety marker featuring an improved marker stabilizing base removably connected thereto and safety accessories.

3,732,843

INTRUSION ALARM

Michael Pappas, Irvington; Paul A. Witte, and Thomas Johnson, both of Hopewell, all of N.J., assignors to Falcon Safety Products, Inc., Mountainside, N.J.

Filed Jan. 20, 1972, Ser. No. 219,251
Int. Cl. G08b *13/08*
U.S. Cl. 116—86 **9 Claims**



Alarm apparatus includes a can which has a valve and contains pressurized gas and is mounted on a support. A horn is mounted on said can. A cover is releasably mounted on the can. Spring means mounted on the support is held in normally stressed condition by the latch. When the latch is released, it actuates the valve and also acts to eject the cover from its position covering the apparatus.

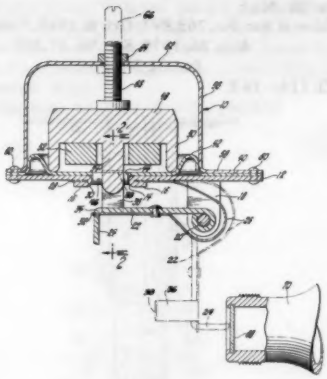
3,732,844

OMNIDIRECTIONAL SENSOR

Howard A. Heckendorf, Brookfield, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed June 30, 1971, Ser. No. 158,418
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 AH **4 Claims**

An omnidirectional sensor includes a base plate having a rectangularly shaped aperture therethrough. An operating arm is swingably mounted on the plate to one side thereof and spring biased to actuated position. A pair of spring arms extend from the operating arm through the aperture and are normally biased together. A retainer plate seats on the base plate to the other side thereof and includes an aperture aligned with the base plate aperture and also receiving the spring arms. A circular embossed rib surrounds the aperture. A cylindrical seismic mass seats on the retainer plate within the rib and is held against movement by a magnet surrounding a central cylindrical extension which forces the spring arms apart and engages lateral flanges thereof with the retainer plate adjacent the aperture to retain the operating arm against movement to actuated position. Upon tilting movement of the seismic mass



under an acceleration pulse of predetermined amplitude and time, the extension thereof is withdrawn from between the spring arms to permit the arms to move together and move through the aperture as the operating arm moves to actuated position.

3,732,845

CUP AND FLAG POSITION INDICATING MEANS

Clovis Istre, 1020 Alamo, Lake Charles, La.

Filed Aug. 3, 1972, Ser. No. 277,505
Int. Cl. G09f *17/00*
U.S. Cl. 116—173 **10 Claims**

For use on a golf ball putting green, a ball sinking cup, a flag and a flagstaff such as is commonly referred to as the pin. The improved cup is interiorly provided with vertically spaced hub-like spiders which stabilize and support the insertable and removable lower end of the flagstaff. As herein shown the lower end is provided with a fiber glass or equivalent member having a head and shank. The essence of the invention pertains to simple, practical and reliable means on the attachable edge of the flag and the flagstaff whereby the flag is capable of being detachably and adjustably mounted by and under the supervision of the greenskeeper precisely and positively in a manner that a golfer teeing off or approaching a given green is

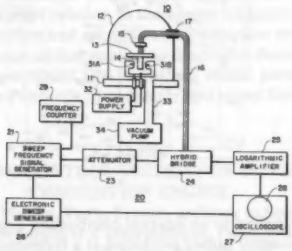
able to not only clearly see the position of the flag but to estimate with reasonable certainty the established locale and placement of the cup, that is, whether the cup has been placed in an area adjacent the rearward segment, the front segment or the medium area relative to the ever varying marginal contour of said green.

3,732,846

CRYSTAL PLATING MONITORING SYSTEM

Theodore J. Lukaszek, Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 7, 1972, Ser. No. 216,032
Int. Cl. C23c *13/08*
U.S. Cl. 118—8 **3 Claims**



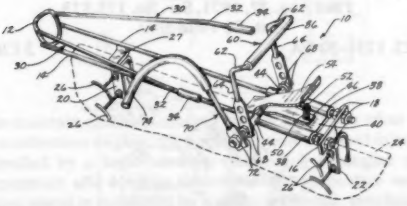
This disclosure relates to crystals, and particularly to plating techniques for improving the quality of crystals. More particularly, this disclosure relates to the production of crystals having a minimum of unwanted, or inharmonic, modes of oscillation. This disclosure describes an apparatus and a method for taking a mode spectrograph to determine the impedance characteristic of a crystal in the frequency range of a desired harmonic while the crystal is in the process of being plated in a vacuum.

3,732,847

ANIMAL HOLDER

Raymond E. Andersen, Rural Route 3, Audubon, Iowa

Filed Apr. 13, 1971, Ser. No. 133,611
Int. Cl. A01k *29/00*; A61d *3/00*
U.S. Cl. 119—103 **7 Claims**



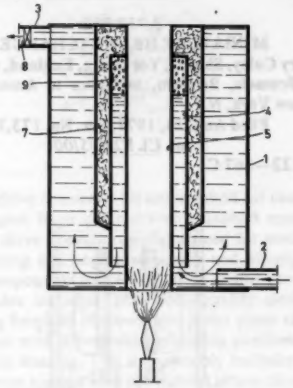
A base element includes a ring at one end for engaging a pig's nose and a sliding member at the opposite end includes an upstanding member for matingly engaging the rear end of an animal and a clamping member is pivotally connected to the slide member for engaging the rear legs of the animal pressing them against the animal's mid-section. A laterally outwardly extending actuating member is provided for the operator to pivot the clamping member and slide the sliding member by the actuating member engaging the operator's hip or leg. The pivoting action of the clamping member is resisted by a spring which yieldably maintains it at a predetermined angle relative to the base member. Side rails are provided on opposite sides of the base member and extend rearwardly from the nose engaging member. The base member includes downwardly extending clamping means for releaseably attaching the holder to an upstanding support.

3,732,848

BOILER

Nils Johan Mauritz Bolin, 27, Nordenskoldsvagen, Handen, Sweden

Filed May 4, 1971, Ser. No. 140,226
Claims priority, application Sweden, May 5, 1970, 6140/70
Int. Cl. F22b *5/00*
U.S. Cl. 122—14 **10 Claims**



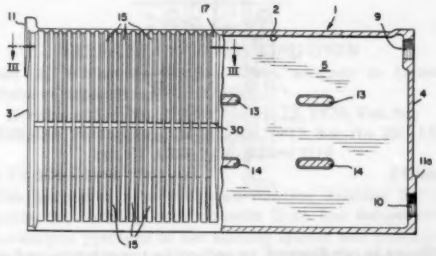
A circulating liquid heated heating system in which a boiler is connected to a conduit system having an outlet for heated liquid leading to the conduit system and an inlet for liquid returned from the conduit system. A heating space in the boiler has a closed upper end and an open lower end in communication with the return liquid, and a heating means extends into or through the heating space, whereby liquid in the heating space is heated and converted to steam. The steam forces liquid out of the heating space and into the outlet from the boiler to the conduit system. The lowering of the liquid level in the heating space cools and condenses the steam in the heating space, thereby reducing the pressure to a pressure below the pressure of return liquid to the inlet. Liquid from the inlet then raises the level of liquid in the heating space, the liquid volume of the boiler is increased, the sound level of the system is reduced and the risk of overheating is reduced by surrounding the heating space with a liquid containing vessel and interposing an insulating layer between at least the upper portion of the heating space and the body of liquid. Because of the high efficiency of the boiler, the boiler can be combined with tube sets laterally displaced from the boiler and having additional heating units between each unit.

3,732,849

MINIATURE HEAT EXCHANGER

Eric Harry Coley, Skidby, England, and James Dutfield, Brussels, Belgium, assignors to American Standard Inc., New York, N.Y.

Filed July 30, 1971, Ser. No. 167,763
Int. Cl. F22b *37/12*
U.S. Cl. 122—367 C **7 Claims**



Covers a heat exchange element for use in a boiler for central heating systems or the like. The heat exchange element in-

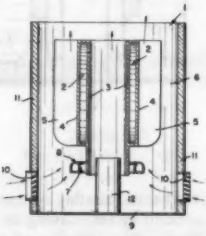
cludes a boiler section having a passage for water or for any other fluid medium, the passage extending longitudinally and horizontally through the section. The water passage section has a plurality of closely arranged laterally protruding fins formed integrally with the walls of the water passage and they are positioned above horizontally disposed burners which may be supplied with gas.

3,732,850

MINIATURE HEAT EXCHANGERS

Eric Harry Coley, Skidby, Yorkshire, England, and James Duffield, Brussels, Belgium, assignors to American Standard Inc., New York, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,757
Int. Cl. F22b *5/00*
U.S. Cl. 122—367 C **17 Claims**



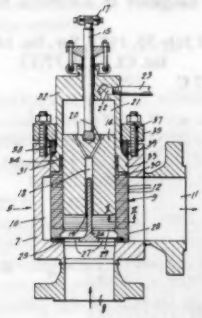
Covers a heat exchanger for use in a boiler or other heating system. The heat exchanger includes one or more boiler sections each having a passage for water or for any other fluid medium, each passage extending vertically throughout the section. One of the walls of each water passage section has a plurality of closely arranged laterally protruding fins formed integrally with the wall of the water passage. The heat exchanger may also be provided with two such sections each equipped with a like plurality of closely arranged laterally protruding fins. The two sections may be arranged opposite each other so that the fins of the two sections extend toward each other. One or more horizontally disposed burners may be positioned below the fins and supplied with gas for heating the fins and the inner walls of the water passages.

3,732,851

METHOD OF AND DEVICE FOR CONDITIONING STEAM

Richard E. Self., 3221 Brimhall Drive, Los Alamitos, Calif.

Filed May 26, 1971, Ser. No. 146,869
Int. Cl. F22g *5/12*
U.S. Cl. 122—487 **10 Claims**



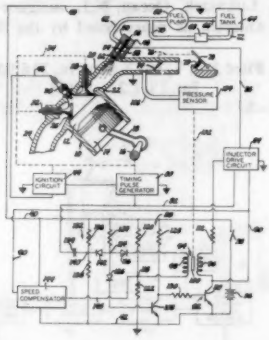
Steam is conditioned, to reduce its temperature and pressure, by introducing cooling water into the steam and thereafter reducing the steam pressure.

3,732,852

ELECTRONIC FUEL INJECTION SYSTEM HAVING SPEED ENRICHMENT

John P. McGavic, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 1, 1971, Ser. No. 158,800
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **5 Claims**



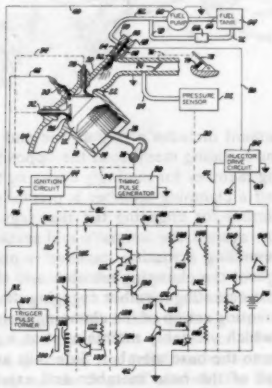
Fuel is applied to an internal combustion engine for the duration of control pulses produced at a frequency proportional to the speed of the engine. The duration of the control pulses is determined as a function of the amplitude of a bias voltage. A speed voltage unidirectionally varies from a base level at the termination of each preceding control pulse to a peak amplitude at the initiation of each succeeding control pulse. A compensation voltage is substantially constant over the duration of each succeeding control pulse at an amplitude proportional to the peak amplitude of the speed voltage during each preceding cycle. The amplitude of the bias voltage is determined in response to the amplitude of the compensation voltage thereby to define the duration of the control pulses as a function of engine speed.

3,732,853

ELECTRONIC FUEL INJECTION SYSTEM HAVING HIGH SPEED COMPENSATION

Lester Wilkinson, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 175,573
Int. Cl. F02d *5/02*
U.S. Cl. 123—32 EA **3 Claims**



In an internal combustion engine, the inductance of an inductive device is defined in direct relation to the intake pres-

sure of the engine. Further, the inductive device is alternately charged through a first resistive device and discharged through a second resistive device at a trigger frequency which is defined in direct relation to the output speed of the engine. As a result, an action voltage of one polarity is developed as the inductive device is charged and a reaction voltage of opposite polarity is developed as the inductive device is discharged. Fuel is applied to the engine in an amount directly related to the duration of the action voltage as determined in direct relation to the time constant provided by the inductance of the inductive device and the resistance of the first resistive device and as determined in direct relation to the maximum peak of the action voltage. In turn, the maximum peak of the action voltage is inversely related to the minimum peak of the reaction voltage as determined in direct relation to the time constant provided by the inductance of the inductive device and the resistance of the second resistive device and as determined in direct relation to the trigger frequency. The resistances of the first and second resistive devices are selected so that the amount of fuel applied to the engine decreases with increasing output speed and increasing intake pressure after the output speed exceeds a predetermined speed limit.

3,732,854

INJECTION-CONTROL SYSTEM FOR INTERNAL-COMBUSTION ENGINE

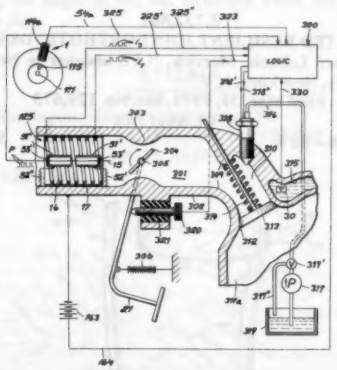
Fernand R. C. Murtin, Paris, France, assignor to Societe Industrielle d'Electronique et d'Informatique, Paris, France

Filed Apr. 2, 1971, Ser. No. 130,615

Claims priority, application France, Apr. 2, 1970, 7011990; June 2, 1970, 7020116

Int. Cl. F02b *3/00*; **G01f** *1/00*

U.S. Cl. 123—32 EA **14 Claims**



To maintain optimum air-fuel ratio in a cylinder of an internal-combustion engine, the operating time of a fuel injector is controlled by a logic network responding to engine speed, temperature and load as determined by respective sensors. Engine speed is measured by a pulse generator, synchronized with the engine, whose pulses are fed to a spark plug in the cylinder, to a timing circuit in the logic network and to an ionization-type flow meter in the air-intake manifold. The output of the flow meter, integrated over a number of cycles, is applied to one input of a comparator via a circuit including a thermistor which serves as a temperature sensor, the other input of the comparator receiving a progressively rising reference voltage from a timing condenser which is charged from a constant-current source. The timing circuit includes a flip-flop, periodically set by a pulse from the generator, which is reset by the comparator whenever the condenser potential reaches the output voltage of the sensing circuit and which thereupon discharges the condenser, keeping it from recharging until the arrival of the next pulse. The flip-flop, when set, actuates the fuel injector by overlappingly energizing a biasing winding and a working winding thereof.

3,732,855

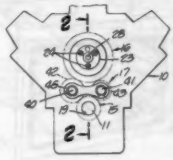
CAMSHAFT DRIVE CONVERTER KIT AND METHOD

Maurus E. Jackson, 433-A Magnolia Avenue, Los Angeles, Calif.

Filed May 12, 1971, Ser. No. 142,495

Int. Cl. F01l *1/00*

U.S. Cl. 123—90.31 **30 Claims**



A camshaft drive converter kit and method for converting a stock auto engine from chain-driven camshaft operation to precision gear drive operation without need for machining or otherwise altering the engine structure and simply by substituting kit components for certain stock engine components. The kit includes an idler gear subassembly designed for limited floating freedom of movement in the plane of the idler and arranged to seek a precision operating position as an incident to engine starting. This subassembly includes a second idler which serves to limit idler movement in one direction and certain other incidental functions.

3,732,856

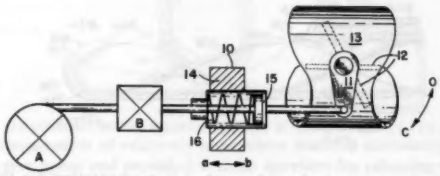
GASOLINE ENGINE CHOKE DELAY DEVICES

Joseph Carl Firey, 1554 North East 95th Street, Seattle, Wash.

Filed Aug. 27, 1970, Ser. No. 67,388

Int. Cl. F02n *17/00*

U.S. Cl. 123—179 A **27 Claims**



This invention provides means for reducing the amount of excess gasoline passed through a gasoline engine during starting. In this way the engine contribution of smog forming materials is reduced. This reduction of excess gasoline is achieved by increasing the portion of the work of compression available to evaporate gasoline. To accomplish these results, the carburetor choke on the engine is caused to pass through a cycle of opening and delayed closing, during starting, by the actions of solenoids, spring loaded dashpots, and temperature sensitive elements, acted on by ambient temperatures and current from the battery.

3,732,857

SELF-CLEANING COOKING OVEN

Victor A. Williamitis, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

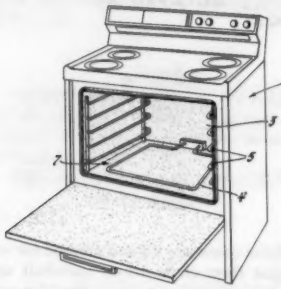
Division of Ser. No. 21,883, March 23, 1970, Pat. No. 3,700,484. This application June 28, 1972, Ser. No. 267,135

Int. Cl. A21b *1/00*; **F24c** *15/16*

U.S. Cl. 126—19 R **4 Claims**

This invention relates to self-cleaning cooking devices wherein the cleaning action results from low temperature, non-catalytic pyrolysis of the staining spatter and condensed vapors resulting from cooking. More particularly, one or more of the metal wall members defining the cooking enclosure are formed with a glazed porcelain enamel undercoating on which

an unglazed porcelain enamel-forming coating is provided by underfiring a porcelain enamel-forming slurry containing an extra loading of pulverized granular materials having sharply angular surfaces selected from the group of non-catalytic



refractory or abrasive materials comprising alumina, silica, emery, tungsten carbide, silicon carbide, kaolin, and feldspar in an amount of from about 20-30 percent by weight of the frit materials in the slurry.

3,732,858

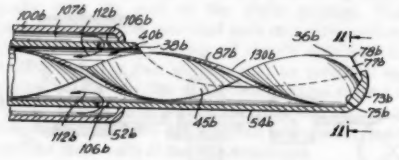
APPARATUS FOR REMOVING BLOOD CLOTS, CATARACTS AND OTHER OBJECTS FROM THE EYE

Anton Banko, Brooklyn, N.Y., assignor to Surgical Design Corp., Long Island City, N.Y.

Continuation-in-part of Ser. No. 762,286, Sept. 16, 1968, Pat. No. 3,528,425. This application Feb. 14, 1969, Ser. No. 799,476

Int. Cl. A61b *10/00, 17/32;* A61m *1/00*

U.S. Cl. 128—2 B **28 Claims**



The invention deals with surgical instrumentation for the removal of generally foreign objects from the eye, including blood clots and the lens of the eye, by inserting a pair of jaws for engaging the object and removing portions thereof as required by movement of the jaws relative to each other.

3,732,859

BRAIN WAVE MEASURING APPARATUS

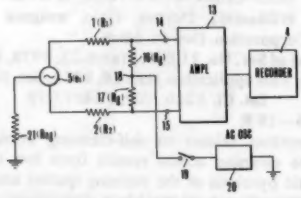
Keiji Tateno, Nakano-ku, Tokyo, Japan, assignor to Nihon Kohden Kogyo, Ltd., Tokyo, Japan

Filed Feb. 1, 1971, Ser. No. 111,540

Claims priority, application Japan, Feb. 2, 1970, 45/8577

Int. Cl. A61b *5/00*

U.S. Cl. 128—2.1 B **7 Claims**



In brain wave measuring apparatus comprising at least two electrodes adapted to be contacted against the skin of a living body and an amplifier with its inputs connected to the electrodes, serially connected impedances of equal values are connected across the inputs of the amplifier and a source of check signal is provided to be connectable to the juncture between the impedances.

3,732,860

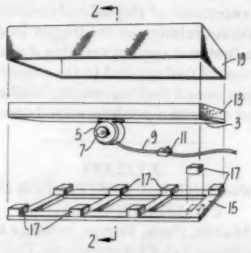
VIBRATING MASSAGE DEVICE

Geraldine H. Thurmer, P.O. Box 987, Yucca Valley, Calif.

Filed July 21, 1971, Ser. No. 164,538

Int. Cl. A61h *1/00*

U.S. Cl. 128—33 **1 Claim**



An improved vibrating bed, sofa or the like is provided wherein the bed element is provided with a motor and eccentric with the moving parts mounted over a frame on spring blocks of a synthetic foam-like material.

3,732,861

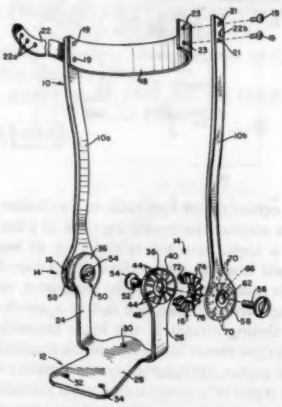
SERRATED RESILIENT JOINT ORTHOTIC DEVICE

Hans Richard Lehneis, Merrick, N.Y., assignor to New York University, New York, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,673

Int. Cl. A61f *3/00*

U.S. Cl. 128—80 E **9 Claims**

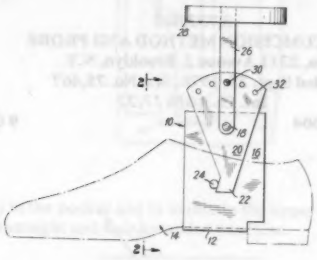


An orthotic device useful in supporting and assisting movement of infirm body limbs is comprised of a pair of support members interconnected for relative resilient motion by a flexure member consisting essentially of elastomeric material. The invention is particularly characterized by a serrated configuration of elements interposed in the mounting of the flexure member in operative relationship with the support members which maintains the parts suitably in place while permitting the intended resilient action.

3,732,862
LEG BRACE

Salvatore Golia, Middle Village, N.Y., assignor to Corona Surgical Appliances Corporation, Corona, N.Y.

Filed May 28, 1971, Ser. No. 147,984
Int. Cl. A61f 5/00
U.S. Cl. 128—80 E 4 Claims

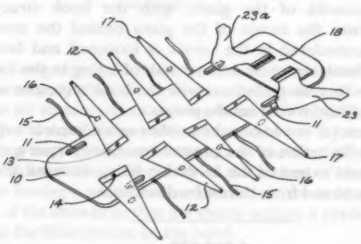


A leg brace which limits turning of the foot with respect to the leg in one direction only. A substantially L-shaped support member has a substantially horizontal wall portion adapted to be fixed to the sole of a shoe and an upright wall portion adapted to extend upwardly along the outer side of a shoe. An elongated bar structure is pivotally connected to the upright wall portion for swinging movement with respect thereto and extends up to an elevation located beneath the knee where a band is carried by the bar structure for attaching the latter to the leg beneath the knee. A stop is provided on the upright wall portion for limiting and swinging of the bar structure in one direction only, and an adjusting structure is provided for adjusting the angle of the bar structure when the latter engages the stop.

3,732,863
STRETCHER

Walter Harrington, Box 494, Battleboro, Vt.

Filed Apr. 14, 1971, Ser. No. 133,848
Int. Cl. A61f 5/04
U.S. Cl. 128—84 C 3 Claims



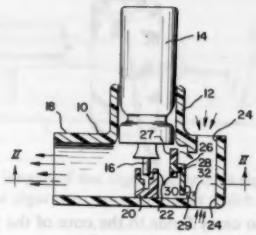
A stretcher for emergency field work is described, having straps for securing a human body on a rigid plane for safe transport. A special carriage for the head may be biased to provide dynamic traction for the neck vertebrae.

3,732,864
INHALATION COORDINATED AEROSOL DISPENSING DEVICE

Robert E. Thompson, Maplewood, and Ernest LeBreton, Lake Hiawatha, both of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed June 7, 1971, Ser. No. 150,654
Int. Cl. A61m 11/00, 15/06
U.S. Cl. 128—173 R 9 Claims

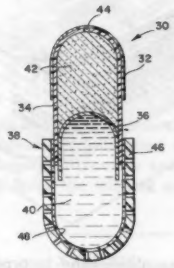
An aerosol dispensing device for discharging a metered amount of a medicament-containing aerosol into the mouth of a patient by manual compression thereof, which can be discharged only during inhalation by the patient or by first tilting the device from its normally vertical dispensing position to a horizontal position, thereby releasing a gate which normally blocks actuation of the device.



3,732,865
OSMOTIC DISPENSER

Takeru Higuchi, and Harold M. Leeper, both of Lawrence, Kans., assignors to Alza Corporation, Palo Alto, Calif.

Filed Jan. 13, 1971, Ser. No. 106,130
Int. Cl. A61m 7/00, 31/00
U.S. Cl. 128—260 9 Claims



An osmotic active agent dispenser is comprised of (1) a first compartment of relatively impervious material containing an active agent and provided with an aperture for releasing said active agent to the exterior of the dispenser; (2) a second compartment of controlled permeability to water containing a solution of an osmotically effective solute which exhibits an osmotic pressure gradient against water; and (3) a movable barrier member separating the first from the second compartment. The barrier member is slidably responsive to an increase in volume in the second compartment via absorption of water therein; whereby as water flows by osmosis into the compartment (2) of the dispenser in a tendency towards osmotic equilibrium with its environment, corresponding pressure is exerted behind the barrier (3) driving it into and diminishing the volume of the compartment (1), in turn continuously ejecting active agent thereout at an osmotically controlled rate over a prolonged period of time. In a specific embodiment, the dispenser is comprised of a plurality of capsule half shells one of which compartmentalizing and being free to move within the device, thereby defining a closure for both the active agent compartment and the solution compartment.

3,732,866
CATAMENIAL DEVICE

Linda L. Accavallo, 40 Woodstock Avenue, Rutland, Vt.

Filed Feb. 18, 1971, Ser. No. 116,531
Int. Cl. A61f 13/20
U.S. Cl. 128—285 1 Claim

An improvement in a tampon for absorbing menstrual fluids in which a capillary wick of non-absorbing material extends

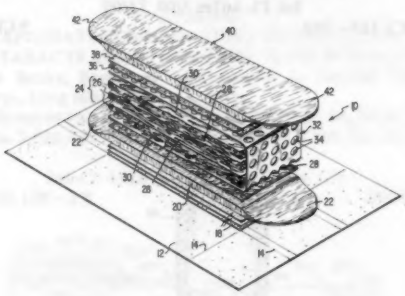
into the interior body of the tampon. The wick acts as a capil-

lary transport to carry fluids to the core of the tampon body, thus using the absorptive capacity of the unexposed cotton.

3,732,867
BACTERIOSTATIC SANITARY NAPKIN

Maxine E. Money, 4187 Patterson Avenue, Winston-Salem, N.C.

Filed Feb. 26, 1968, Ser. No. 708,049
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R **13 Claims**

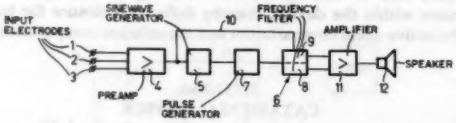


Employment of hexachlorophene incorporated plastic in perforate sheet, imperforate sheet and shredded form as antifungal and bacteriostatic means in sanitary napkins or the like.

3,732,868
DEVICE FOR THE AUDIBLE REPRODUCTION OF A CARDIOGRAM WITH SPEECH-LIKE SOUNDS

Leonardus Franciscus Willems; Joseph Jacobus Marie Neelen, and Benjamin Lopes Cardozo, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,629
Claims priority, application Netherlands, Mar. 25, 1970, 7004341
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **7 Claims**

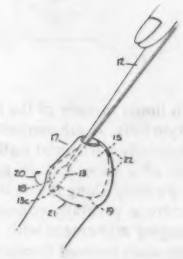


A device for the audible reproduction of electrophysiological signals, which includes a serially connected sine wave generator and pulse shaper in which these signals are reproduced in the form of speech-like sound signals, and a pair of band pass filters of which one is frequency tunable to vary the monotonic signals from the pulse shaper in response to deviations in the electrophysiological signals so that the deviations are reproduced as speech-like deviations in these sound signals.

3,732,869
CIRCUMCISION METHOD AND PROBE

Harry Bronstein, 2311 Avenue J, Brooklyn, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,467
Int. Cl. A61b *17/22*
U.S. Cl. 128—304 **9 Claims**



Probes for use in loosening and extracting smegma from the cervix of the glans penis of an uncircumcised male human being, preliminary to a circumcision operation, are disclosed. The probe construction is characterized by a small, somewhat elongated bulbous head having an oval or rounded tip and undercut at one side to provide a hook structure adapted to be protracted interiorly of the mucosa into the cervix of the glans. The hook structure may be provided with a medial longitudinal channel to define a pair of lateral ears to enhance the smegma-loosening action. When the probe is moved to a limited extent laterally back and forth, i.e., right and left, along the corona of the glans, with the hook structure protracted into the cervix of the glans behind the corona, smegma accumulated in the cervix is loosened and broken free by the hook structure without risk of injury to the frenulum and can then be pulled out with the hook structure when the probe is withdrawn from the prepuce.

This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

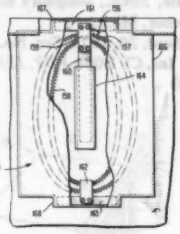
3,732,870
FOUNDATION GARMENTS HAVING RESILIENT CONTROL UNITS

Henry M. Herbener, 803 N. Dawson St., Thomasville, Ga.

Filed Nov. 3, 1971, Ser. No. 195,210
Int. Cl. A41c *1/00*
U.S. Cl. 128—533 **5 Claims**

Foundation garments of the girdle, corselet, panty girdle and bikini types feature resilient abdominal control units and simplified pocket structures for such units, wherein the number of fabric layers is held to a minimum to reduce bulkiness. Each control unit is constructed to allow complete freedom of movement of the body so as to promote comfort while continuing to exert abdominal control and causing the garment to maintain a proper position on the body at all times. Improved means are provided to completely eliminate the possibility of the main vertical rib of the control unit from jabbing into the body during stooping or bending and the con-

trol unit possesses improved means coacting with the simplified pocket to center the unit laterally, to seat the unit



properly in the pocket and to maintain the upper margin of the garment straight and taut for added neatness.

3,732,871

METHOD AND APPARATUS FOR MAKING CIGARETTES

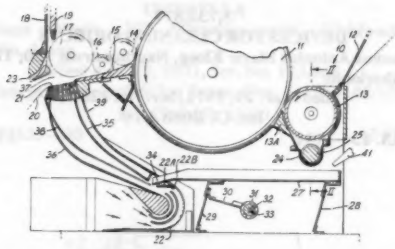
Desmond Walter Molins, London, England, and Francis A. M. Labbe, Neuilly-sur-Seine, France, assignors to Molins Machine Company Limited, London, England

Filed Apr. 20, 1970, Ser. No. 30,070

Claims priority, application Great Britain, May 2, 1969, 22,564/69

Int. Cl. A24c *5/39*

U.S. Cl. 131—84 C **9 Claims**



In making cigarettes, tobacco shorts are extracted from the tobacco supply after which the remaining tobacco is showered into an air stream onto a moving band to form a filler stream. The shorts are fed into the tobacco shower by means of a vibrating tray which serves to smooth the flow of shorts into the tobacco shower, the width of the stream of shorts in the shower having a predetermined width narrower than the total width of the shower so that the shorts occupy a predetermined level in the filler stream on the band.

3,732,872

APPARATUS FOR THE UNIFORM ADDITION OF SOLUBLE MATERIALS TO CIGARETTES

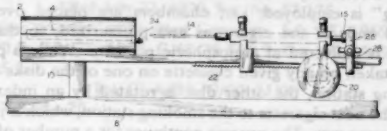
Leon Lakritz, Blackwood, N.J., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 31, 1971, Ser. No. 176,621

Int. Cl. A24b *3/12;* **A24f** *25/00*

U.S. Cl. 131—133 R **3 Claims**

An apparatus for uniformly distributing an additive solution throughout the length of a cigarette. A hinged block with a recessed cavity or cradle means for holding a cigarette is immovably attached to one end of a track. A carriage provided with clamps for holding a syringe or additive reservoir having a needle and plunger is movably attached to the track in a position facing the hinged block. A stop means is provided to prevent rearward movement of the plunger after the carriage has been moved forward enough so that the syringe needle has



penetrated the length of the cigarette and its tip is positioned at the end of the cigarette opposite that at which it entered.

3,732,873

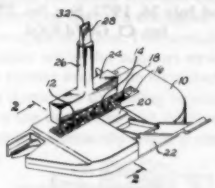
TAMPING TOOL

William C. O'Rear, Pico Rivera, Calif., assignor to Max W. Perkins, Whittier, Calif., a part interest

Filed May 20, 1971, Ser. No. 145,367

Int. Cl. A24f *47/00*

U.S. Cl. 131—170 R **10 Claims**



A tool for tamping and aligning tobacco in a cigarette molding machine comprising in integrated combination a tamp base, an upright fingergrip member and a tapered insertion member extending from the vertical end of the fingergrip member.

3,732,874

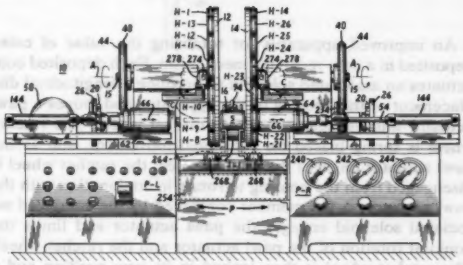
SMOKING MACHINE

John R. Wagner, and Melvin D. Sidbury, Greensboro, N.C., assignors to Loew's Theatres, Inc., New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,268

Int. Cl. A24f *13/00*

U.S. Cl. 131—171 R **11 Claims**



A smoking machine includes a pair of parallel disks alternately rotatable about a common axis and each provided with a number of holders for cigarettes or other smokable articles. Means is provided for automatically lighting the cigarettes. The holders are spaced apart at equal intervals in circular paths respectively centered on the axis of the disks. A shuttle valve is mounted at a smoking station between the two disks and adjacent to each to receive a continuous stream of smoke from the cigarettes in sequence and channel it to a desired location, at which there may be, for example, a holder

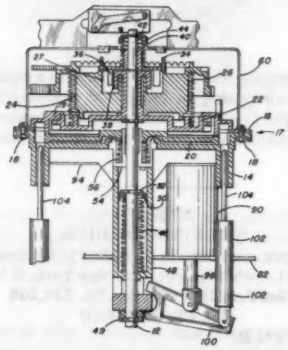
for an experimental animal. The valve shuttles between the two disks to take a puff on each cigarette as it arrives at the smoking station. The cigarettes carried on one disk are thus puffed alternately with those carried on the other. "Reverse puffing" is employed: i.e., chambers are placed over the lighted ends of the cigarettes and pressurized, so that the smoke is delivered at atmospheric pressure. While a puff is being taken on any given cigarette on one of the disks at the smoking station, the other disk is rotated by an indexer to bring the next cigarette to the smoking station, which is puffed in the same way. The process continues for a number of rotations of the disks, until the cigarettes are smoked to the desired extent, whereupon they are automatically ejected.

3,732,875

INCOME TOTALLING DEVICE

Herman G. Jensen, Chicago, and Bernhard O. Williams, Elmhurst, both of Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed July 26, 1972, Ser. No. 275,368
Int. Cl. G07d *9/04*
U.S. Cl. 133—8 **3 Claims**



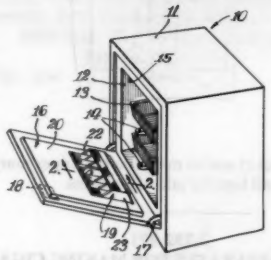
An improved apparatus for totalizing the value of coins deposited in a coin receiving mechanism. Each deposited coin actuates an associated solenoid to produce a longitudinal displacement of the housing of the apparatus and moves a pawl actuator into engagement with a ratchet wheel. The ratchet wheel is spring biased for rotational movement, and as the pawl actuator engages the ratchet wheel the ratchet wheel is disengaged from the housing to rotate in conjunction with the pawl actuator. A pin member controlled by the energized associated solenoid engages the pawl actuator and limits the conjoint rotation of the pawl actuator and the ratchet wheel. The ratchet wheel is then locked in its new position and a motor driven gear member, which is activated by a lever operated switch upon displacement of the ratchet wheel, follows or "tracks" the ratchet wheel until the original relative orientation of the ratchet wheel and gear member is reattained. Simultaneously, a gear arrangement drives a counter to register the new cumulative total. A contact member is mounted on the housing and is positioned so that it engages and delays actuation of the lever operated switch until the associated solenoid is released and the longitudinally displaced housing returns to its original position thereby preventing premature operation of the motor.

3,732,876

DISHWASHER SILVERWARE BASKET WITH SOAKER MEANS

Albert T. Braga, Kenneth J. Grall, and Roque D. Marcade, all of Stevensville, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 30, 1971, Ser. No. 185,135
Int. Cl. B08b *3/02, 13/00*
U.S. Cl. 134—58 D **12 Claims**



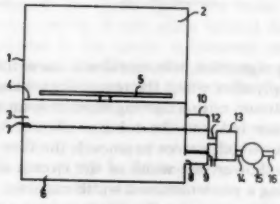
A dishwasher having a silverware basket carried on the door for washing of silverware placed in the basket during the dishwashing operation. The basket includes structure for alternatively arranging the basket for passage of the dishwashing liquid therethrough or for retaining a body of the dishwashing liquid in a lower portion thereof for soaking the silverware disposed in the basket during the first part of a dishwashing operation.

3,732,877

DEVICES FOR CLEANING OBJECTS

Hermanus Antonius Marie Kloeg, Nautilusstraat 150, Tilburg, Netherlands

Filed Mar. 29, 1971, Ser. No. 128,776
Int. Cl. B08b *3/10*
U.S. Cl. 134—111 **5 Claims**



A washing apparatus has a collecting space for a washing liquid. A duct extends through the wall of the collecting space intermediate the level of the liquid therein and the bottom of the space, the duct being connected to an external filter assembly. Washing liquid is circulated from the filter assembly back to the apparatus. The top of the filter assembly has an aperture to permit access to a filter therein.

3,732,878

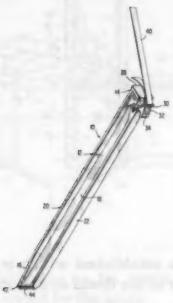
VARIABLE TENSIONING STAKE

James C. Blankemeyer, Route 1, Columbus Grove, and Robert L. Blankemeyer, Route 1, Fort Jennings, both of Ohio

Filed June 28, 1971, Ser. No. 157,210
Int. Cl. A43f *1/16*
U.S. Cl. 135—15 PE **7 Claims**

A variable tensioning stake has a camming serrated surface adjacent the impact receiving head portion. The head portion

is supported by three flanges to dissipate impact stress. The central flange member has a pair of inclined camming surfaces for receiving a substantially square ring in a snap engaging fashion. The major portion of the stake has a front and rear



flange connected by a central web with the front flange varying in size to permit a readypenetration of a support surface at the lower portion of the base, while providing a stress resistant structure at the upper portion. The stake can be made of various materials, such as hard plastic.

3,732,879

UMBRELLA

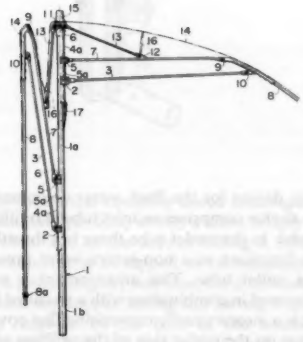
Shigekazu Okuda, 307 Minamiue-machi, Kishiwada-shi, Osaka, Japan

Filed Aug. 23, 1971, Ser. No. 173,968

Claims priority, application Japan, Nov. 5, 1970, 45/109708

Int. Cl. A45b *19/00*

U.S. Cl. 135—20 **13 Claims**



An umbrella construction is disclosed having lower links radiating from a lower ferrule mounted on a shaft and upper links radiating from a middle ferrule mounted on the shaft. The upper and lower links support the main ribs of the umbrella. Auxiliary links connect an upper link with an upper ferrule on the top of the shaft. The lower and middle ferrules are adapted for upward and downward sliding movement on the shaft during opening and closing of the umbrella, thus permitting the ribs, links and umbrella cover to be smoothly collapsed and folded when the umbrella is closed.

3,732,880

UMBRELLA

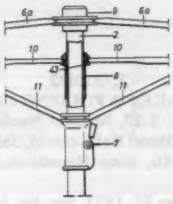
Heinz Weber, 401 Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed July 22, 1970, Ser. No. 57,175

Claims priority, application Germany, July 25, 1969, P 19 37 890.6; July 25, 1969, G 69 29 502.9; Oct. 25, 1969, P 19 53 795.2

Int. Cl. A45b *19/00, 25/08*

U.S. Cl. 135—20 **6 Claims**



An umbrella wherein the dome ribs and the support structure and a part of the stick define a triangular structure when the umbrella is in an open position. The stretcher is connected to the auxiliary runner while the support structures are connected to the main runner and to the stretcher members. The outer section of the dome ribs extending beyond the triangular structure defined by the dome ribs and the stretcher members is flexible and is bowed concavely when a cover is tightened about the umbrella.

3,732,881

SELF-OPENING UMBRELLAS

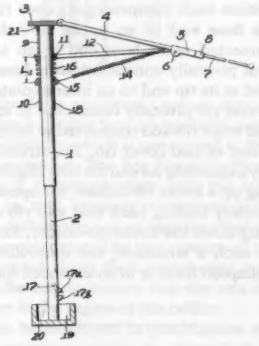
Masaaki Hirai, Osaka, Japan, assignor to Asahi Kogyo Co., Ltd., Osaka, Japan

Filed Feb. 16, 1970, Ser. No. 11,743

Claims priority, application Japan, Aug. 22, 1969, 44/80219

Int. Cl. A45b *25/16*

U.S. Cl. 135—22 **3 Claims**



A self-opening umbrella utilizing tension springs for self-opening operation is disclosed and comprises a rod or stick with a crown secured on the top thereof, a plurality of roof ribs having their respective base ends thereof pivotably mounted to the periphery of the crown, a slider member roof rib, each slider member being slidable along its associated roof rib, a lower sliding sleeve slidably mounted around the rod or stick and including connection means for connecting the end of an associated tension spring, an upper sliding sleeve slidably mounted around the rod or stick and above the lower sliding sleeve, a brace member associated with each roof rib and

pivotably connected at one end thereof to the slider member and having its otherwise free end pivotably connected to the upper sliding sleeve, and an axial compression spring disposed between the upper sliding sleeve and the connection means of the lower sliding member, the tension spring being connected at its otherwise free end to an associated brace and at a point near the associated slider member, whereby maintaining the umbrella in an open condition is attained utilizing little force and, hence, the force necessary for closing the umbrella is reduced.

3,732,882

STRUCTURE OF A FOLDING UMBRELLA

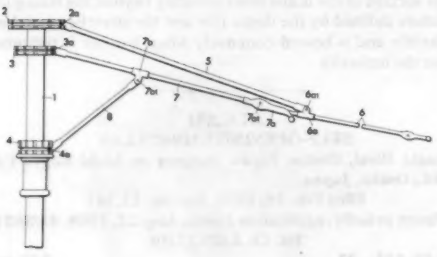
Nobutoshi Kida, No. 1-27, Minami Nonin-cho, Osaka; Kazo Saito, No. 9-374, Ohtori Naka-machi, Sakai, and Junichi Furukawa, No. 3-9-10, Sone Higashi-cho, Toyonaka, all of Japan

Filed May 27, 1971, Ser. No. 147,349

Claims priority, application Japan, June 1, 1970, 45/47777; Dec. 25, 1970, 45/129646; Dec. 28, 1970, 45/127160

Int. Cl. A45b *19/04*

U.S. Cl. 135—25 **6 Claims**



A novel structure of a folding umbrella comprises a plurality of rib assemblies each comprising a cover rib pivotally connected at its base end to an upper rib-holder, a main rib pivotally connected at its base end to an intermediate rib-holder, a strut pivotally connected at its base end to a lower rib-holder and at its tip end to an intermediate portion of said main rib, an end rib pivotally connected at its base end to an tip end of said main rib and connected at its intermediate portion to a tip end of said cover rib. The structure is capable of automatically expanding an end rib into alignment with a main rib by pushing up a lower rib-holder, for opening the umbrella and automatically folding back said end rib onto a cover rib only by pulling down the lower rib-holder, for closing the umbrella. With such a structure, the umbrella may be closed either in a collapsed form or in an extended form.

3,732,883

FLUIDIC LINEAR ACCELEROMETER

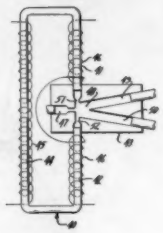
Otto R. Munch, West Allis, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 26, 1970, Ser. No. 5,651

Int. Cl. F15c *1/14*

U.S. Cl. 137—824 **14 Claims**

This disclosure includes a fluidic linear accelerometer in the form of a looped conduit of substantially lineal configuration having a fluid input supply and terminating in a pair of opposed ends. A summing impact modulator is connected to the conduit ends to provide an amplified fluidic signal. The density of the fluid flowing in one of the two lineal passageways forming the loop is changed with respect to the other. A pressure differential is established which is dependent upon the linear acceleration in the lineal direction and the difference in densities.



3,732,884

ARRANGEMENT IN WATER-CLOSETS

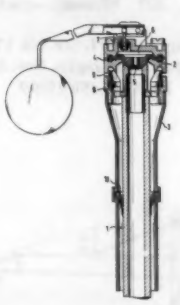
Ingmar Strom, Helsinki, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed June 26, 1970, Ser. No. 50,036

Claims priority, application Finland, June 26, 1969, 1891/69

Int. Cl. F16k *45/00*

U.S. Cl. 137—218 **4 Claims**



A refilling device for the flush water container of a water-closet. The device comprises an inlet tube, a refilling valve and an outlet tube. In the outlet tube there is a throttling member which also functions as a non-return valve preventing back flow in the outlet tube. This arrangement is especially intended to be used in combination with a so called back suction guard, that is a means usually comprising flap covered air suction openings on the outlet side of the refilling valve. The invention enables the use of relatively stiff flaps or other back flow preventing means at said air openings so that noise producing air suction through the openings can be completely avoided during normal operation of the refilling device.

3,732,885

VALVE AND METHOD OF ASSEMBLING SAME

Herbert Allen, P.O. Box 1212, Houston, Tex.

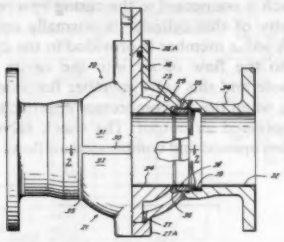
Filed Sept. 29, 1971, Ser. No. 184,727

Int. Cl. F16k *27/10*

U.S. Cl. 137—315 **18 Claims**

A valve having seats made of axially separable, inner and

outer parts which may be moved to positions, during assembly of the valve, permitting adjacent parts of the valve body to be



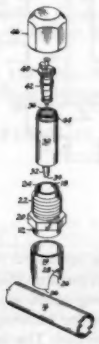
welded and the weldments to be stress relieved without damage to seal rings carried by the seats.

3,732,886

COPPER TUBE SERVICE VALVE

John W. Mullins, c/o J. R. Phillips, 2878 N. 7th Place, Phoenix Ariz.

Filed Apr. 26, 1971, Ser. No. 137,376
Int. Cl. B23b *41/08*; F16e *41/04*
U.S. Cl. 137—318 3 Claims



A generally cylindrical centrally bored housing is coaxially secured, at one end portion, within a short length of copper tubing. The other end of the copper tubing is bifurcated for connection with a line to be tapped. A valve equipped tubular core, having a length slightly less than the combined length of the housing and the copper tubing and having a line piercing tip, is freely received by the bore of the housing. A cap threadedly engaged with the free end of the housing, forces the line piercing tip into the line and seals the core with the housing and line.

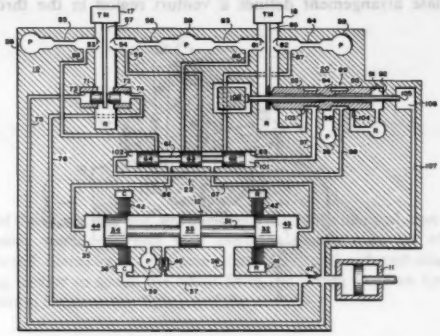
3,732,887

FLOW-PRESSURE CONTROL VALVE SYSTEM

Paul F. Hayner, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 12, 1971, Ser. No. 188,283
Int. Cl. G05d *16/06*
U.S. Cl. 137—486 16 Claims

A valve system is disclosed in which a main control valve is controlled by either one of two pilot stages. Each stage operates to control the main valve to make one condition of the output follow a corresponding input signal closely. Control of the main valve may be transferred from one to the other



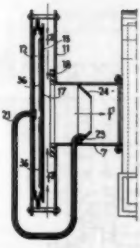
pilot stage either manually or automatically. In one embodiment, transfer occurs as the magnitude of one of the conditions reaches a predetermined threshold.

3,732,888

CLOSING DEVICE FOR A PNEUMATIC SYSTEM

Michel Convain, Marcq-en-Baroeul, and Pascal Meresse, Roubaix, both of France, assignors to Societe Anonyme Pronal, Roubaix, France

Filed Mar. 10, 1972, Ser. No. 233,601
Int. Cl. G05d *7/03*
U.S. Cl. 137—489 13 Claims



A closing device for a pneumatic system comprising an inflatable bag having a closing face co-operable with an annular seat defining an aperture which is connected to the pneumatic system by passage means. The bag has an orifice which conduit means puts in communication with the interior of the passage means so that pressure variations in the passage means inflate or deflate the bag so that the closing face closes or unmasks the annular seat. The bag consists of two fluidtight sheets interconnected along their peripheries and means are provided inside the bag to ensure that the two sheets are always spaced apart in the region of the orifice.

The device can be employed in combination with the inlet of fluid-flow generating means to control the fluid flow through the inlet.

3,732,889

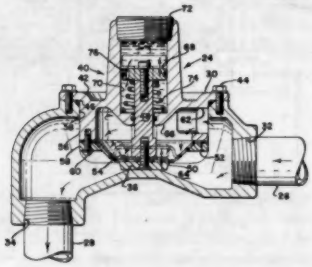
AIR RELIEF VALVE ASSEMBLY

William J. Conery, and Donald A. Kaessen, both of Ashland, Ohio, assignors to Hydr-O-Matic Pump Company, Hayesville, Ohio

Filed Apr. 8, 1971, Ser. No. 132,423
Int. Cl. F16k *31/12*
U.S. Cl. 137—498 8 Claims

A valve for venting air from the pumping chamber of a liquid pumping system. A valve plate is normally held in open

position remote from the valve seat by a spring. A flexible diaphragm is attached to the valve plate and divides the valve housing into a through passage and a chamber which communicates with the inlet port of the valve. The valve seat-valve plate arrangement defines a venturi region in the through



passage of the valve. Under low pressure, low volume flow conditions, the valve remains in open position. As the flow rate increases, the decrease in pressure across the venturi together with the increased pressure in the chamber behind the diaphragm overcomes the spring pressure to close the valve.

3,732,890

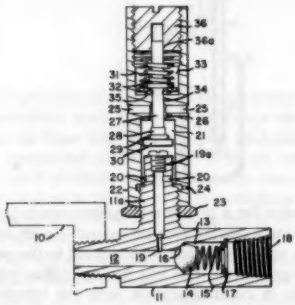
UNLOADER VALVE FOR AIR COMPRESSOR

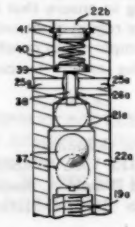
Dresden G. Smith, San Jose, Calif., assignor to Aqua-Mec, Inc., San Jose, Calif.

Filed May 28, 1971, Ser. No. 148,012

Int. Cl. F16k *15/00*

U.S. Cl. 137—512.3 **2 Claims**





A valve device provided to the outlet port of an air compressor for subjecting the compressor to a limited back pressure until the compressor gains enough speed to be able to pick up the full load. Thereafter the device operates to open the passage to the compressed air tank. This device is provided with a casing having a main passage therethrough in which there is positioned a check valve which controls the passage to the compressed air tank. This device also includes a cylinder which is connected to the casing by a restriction hole and the cavity of this cylinder is normally open to the atmosphere. A valve member is provided in the cylinder cavity responsive to the flow of air into the cavity through said restriction hole and this valve member functions to close an exhaust hole when the air compressor approaches delivery of normal compressed air output. The check valve in the main passage is then opened and compressed air flows into the tank.

3,732,891

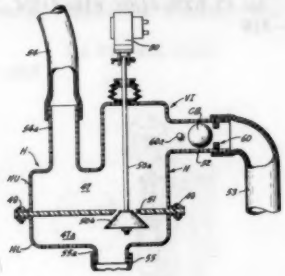
SOLENOID OPERATED, TWO WAY DIVERTER VALVE FOR FLUID LINE WASHING APPARATUS

Lloyd F. Bender, Route 5, Hayward, Wis.

Division of Ser. No. 105,314, Jan. 11, 1971, Pat. No. 3,670,744. This application Apr. 17, 1972, Ser. No. 244,613

Int. Cl. F16k *11/14*

U.S. Cl. 137—609 **2 Claims**



An improved, solenoid operated, two way diverting valve for fluids for a washing apparatus that includes a fluid circuit for conducting a cleansing solution through conveying conduits, and a drying means for blowing heated air through the conduits after they are cleaned. The improved diverting valves selectively divert the washing and drying fluids through the apparatus.

3,732,892

FLUIDIC MOTION LIMITING SYSTEM FOR MOTOR DRIVEN APPARATUS

Thomas J. Bubula, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

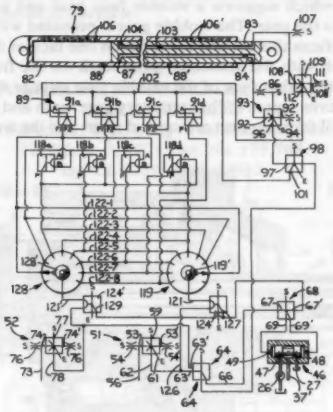
Division of Ser. No. 3,734, Jan. 19, 1970, Pat. No. 3,613,505. This application Jan. 29, 1971, Ser. No. 111,085

Int. Cl. F15c *3/00*

U.S. Cl. 137—609 **2 Claims**

An operator's control lever which is shifted to actuate a hydraulic motor is returned to the initial position to stop the motor after a preselected amount of travel of a element driven by the motor. A fluidic circuit has means producing digital signals indicative of successive increments of travel of the element and has a counter for storing any preselected number of such signals. When the selected count is reached, a kick-out means manipulates the operator's control lever to stop further

operation of the motor. The count required to stop the motor, and thus the amount of travel of the element, may be changed



by turning of a control knob. The system is applicable, for example, to limiting movement of the lift arms of a loader vehicle.

3,732,893

SOLENOID VALVE

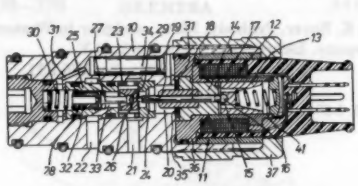
Kurt Ziesche, 7141 Neckarrems; Waldemar Hans; Josef Duffner, both of 8600 Bamberg; Gerhard Brune, 7141 Schwieberdingen, and Alfred Grob, 7141 Oberstenfeld, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 6, 1972, Ser. No. 232,082

Claims priority, application Germany, Mar. 5, 1971, P 21 10 596.4

Int. Cl. F16k *31/10, 39/00*

U.S. Cl. 137—625.65 **11 Claims**



In a solenoid valve the axially movable magnet armature (driving piston) is connected through an actuating ram with a valve head which is movable between two valve seats and which is urged against the electromagnet force by a spring-biased counterpiston engaging said valve head at its end remote from said ram.

3,732,894

PIPEFITTING COVER

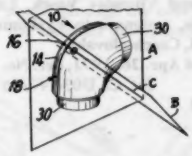
Chris J. Botsolas, 56 Woodridge Avenue, Metuchen, N.J.

Filed Jan. 11, 1971, Ser. No. 105,586

Int. Cl. F16l *9/22*

U.S. Cl. 138—178 **13 Claims**

A pipefitting cover comprised of two half sections pivotally connected together at a single point so that one half section may be revolved into superimposed, nested relationship within the other half section for storage and shipping, and thereafter revolved out of nested relationship to a position of opposed relationship where the two half sections take the shape of the fitting to be covered. The two half sections preferably are formed from a flexible, resilient material, each having a continuously curved portion overlapping the longitudinal center-



line of the cover and also are each provided with integral, continuously extending end wall portions which may be of restricted diameter to accommodate adjacent reduced-size piping and/or to space the cover from the fitting to allow for insulation between the fitting and the cover.

3,732,895

REVERSIBLE JACQUARD LOOM AND REVERSING MECHANISM THEREFOR

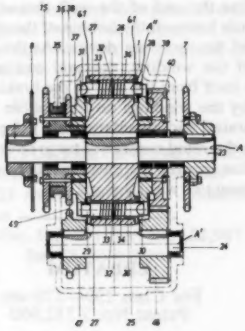
Walter Keim, Senden, Iller, Germany, assignor to Firma Grosse Webereimaschinen GmbH, Neu-Ulm, Germany

Filed June 28, 1971, Ser. No. 157,089

Claims priority, application Germany, June 26, 1970, P 20 31 807.4

Int. Cl. D03c *3/32*

U.S. Cl. 139—1 E **10 Claims**



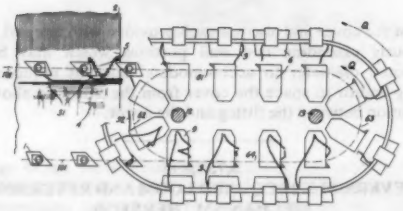
A jacquard loom has a reversing mechanism which, on reversal of the loom drive in case of weft failure, causes the blades controlling the heddle-control rods to orbit backwardly (reverse sense) only until the loom is again in the open-shed or closed-shed position, whereupon the blades are caused to orbit forwardly (forward sense). This apparatus has a single input connected directly with the drive and a pair of outputs, one of which is rigidly (no slip) connected to the input and is operatively connected to the card-reading device and the other of which controls the control-rod blades. The input shaft carries, in addition to the input sprocket and first-output sprocket, a rotatable element flanked by a pair of disks and defining a unidirectional lost-motion indexing clutch therewith. A pair of pins passing through the rotatable element can engage with their ends in either of the flanking disks which are themselves positively coupled (no slip or phase shift) together to rotate in opposite senses. Each disk is formed with notches having one straight and one inclined flank (or only the pins may have such flanks) and these notches only line up in the open-shed and closed-shed positions of the loom, or in at least one of these positions, so that the pins can only slide to change second-output rotation sense when the loom is in either of these positions.

3,732,896

METHOD OF AND APPARATUS FOR FILLING THE SHUTTLES WITH WEFT IN PROGRESSIVE SHED WEAVING LOOMS

Frantisek Jekl; Vladimir Mateju, both of Usti nad Orlici; Josef Pech, Brno, and Vitezslav Vasek, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Apr. 26, 1971, Ser. No. 137,250
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **11 Claims**



Method of and apparatus for filling shuttles with weft in progressive shed weaving looms with continuously travelling shuttles where the filling of shuttles takes place at the common part of the paths of shuttles and filling units moving at the same speed. The excessive part of the end of weft thread is transferred back, in the direction opposite to that of the direction of movement of the thread during the filling of the shuttle, before the end of the weft thread supply is inserted into the shuttle between the bobbin of the shuttle and the driving means of the metering device. At the same time, at the beginning of the winding, the said end of the weft thread supply frees itself from the grip of the braking mechanism and is retained by the windings on the bobbin of the shuttle; the weft is separated and simultaneously gripped by the nipping device, after the rated number of turns have been wound, after the shuttle has entered the shed and the weft has been interlaced by at least two warp threads.

ERRATUM

For Class 139—370 see:
Patent No. 3,732,900

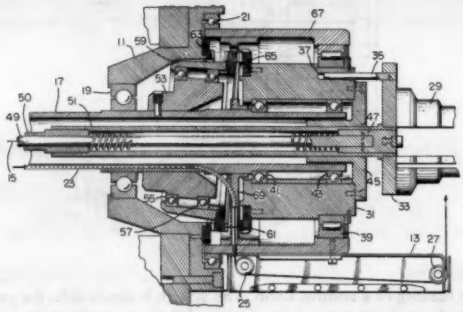
3,732,897

APPARATUS FOR DEVELOPING WINDING COILS

Richard B. Arnold, and Dallas F. Smith, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Apr. 1, 1971, Ser. No. 130,399
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.1 **11 Claims**

A high speed winding machine for developing or generating coil groups each comprising one or more coils each having one or more turns of winding material. The turns are developed and placed on coil turn receiving means such as coil injection tooling or a coil transfer mechanism with or without auxiliary coil shaping means. The apparatus may be advantageously utilized in the manufacture of wound inductive devices, e.g., dynamoelectric machines such as motors. An illustrated preferred embodiment includes a frame, a coil form support having auxiliary coil shaping means embodied as a coil form mounted thereon for axial movement relative to the frame, and a flyer rotatable about a central axis for developing wire turns on the coil form. In order to prevent rotation of the coil form, located in the vicinity of the central axis, with the rotating flyer and a rotating wire feed tube, a migrating mechanical linkage is provided between the frame and coil form support to prevent rotation of the coil form with the rotating flyer. The illustrated migrating linkage includes a carriage which supports a wobble face gear and is rotatable relative to the gear. The wobble gear is provided with teeth on opposite faces thereof and the teeth on one face of the wobble gear mesh with the stationary gear teeth on the frame while teeth on the other face of the wobble gear engage the gear on the coil form support. The stationary gear teeth and gear teeth on the coil form support are spaced apart and the wobble gear



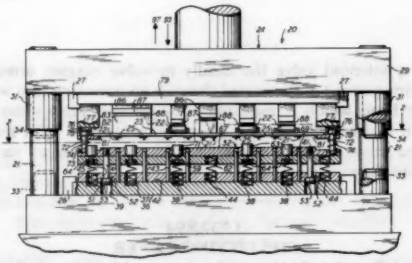
extends between the spaced gears so that portions of the wobble gear spaced 180° apart engage the stationary gear teeth and gear teeth on the coil form, respectively. The wobble gear carriage is canted relative to the central axis and as it rotates it drives succeeding teeth on the faces of the wobble gear into engagement with succeeding ones of the stationary and coil form support gear teeth. As the carriage rotates with the flyer, the wobble gear executes a rotationless wobble motion synchronized with the flyer. This motion results in a moving shutter, synchronized with the flyer, through which wire is fed to the flyer.

3,732,898

BENDING APPARATUS FOR MULTIPLE WIRE-LIKE ARTICLES

Albert E. Boyer, Peabody, Mass., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 6, 1971, Ser. No. 186,831
Int. Cl. B21f *1/00*
U.S. Cl. 140—105 **12 Claims**



An array of leads extending from diverse electrical components mounted on a printed circuit board are bent simultaneously by an apparatus which advances the board to engage the leads with an array of dies and punches. The dies are formed in a spring biased plate by bores each of which has a bevelled ramp adjacent thereto. As the board advances, the

leads engage the bevelled ramp and are bent partially in predetermined directions. The punches are aligned with the bores and engage the leads to permanently crimp the leads to the board upon movement of the plate over the punches as the board continues to advance.

3,732,899

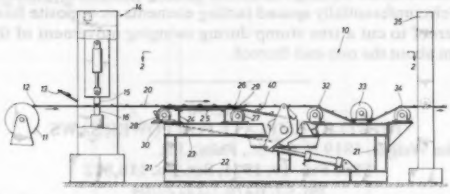
APPARATUS FOR DETERMINING THE GAUGE OF WIRE SCREEN OR MESH

William A. Schindler, 1713 Long Acre, Houston, Tex.

Filed Sept. 3, 1971, Ser. No. 177,704

Int. Cl. B21f *23/00, 27/10*

U.S. Cl. 140—112 **12 Claims**



An apparatus for use in the manufacture of wire screening or mesh which determines the pitch thereof. The apparatus incorporates a means for drawing the completed wire screen or mesh through a welding apparatus. A plurality of flexible chain drives incorporates upwardly extending dogs which selectively engage the wire mesh and the transverse members thereof. The dogs are movable so as to adjust to a different pitch. The chain drives are advanced by means of a ratchet mechanism, the stroke thereof being variable. The stroke can be varied, for example, from two inches to about six inches.

3,732,900

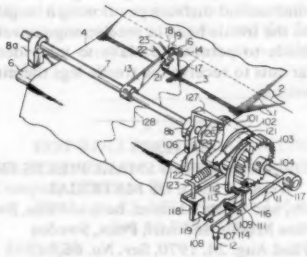
WEFT FEELER MECHANISM

Toemon Sakamoto, Hamamatsu-shi, Skizuoka-ken, Japan, assignor to Enshu Limited, Hamana-gun, Shizuoka-ken, Japan

Filed Dec. 15, 1971, Ser. No. 208,243

Int. Cl. D03d *51/34*

U.S. Cl. 139—370 **14 Claims**



A rocking-type weft feeler mechanism wherein the weft feeler is arranged to reciprocate intermittently and periodically parallel to the cloth-fell from picking to picking.

3,732,901

APPARATUS FOR WINDING RING-SHAPED ARTICLES

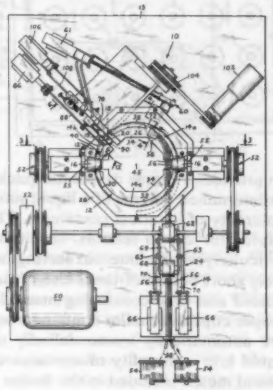
Bryan Kent, Ithaca, and Duane Kent, Beron Center, both of N.Y., assignors to Pulse Engineering Inc., San Diego, Calif.

Filed Mar. 4, 1971, Ser. No. 120,960

Int. Cl. H01f *41/08*

U.S. Cl. 140—92.1 **14 Claims**

A method and apparatus for winding wire strands onto toroidal cores in which a length of wire is fed along a radially inwardly facing channel in an arcular guide to form a loop. As the leading end of the wire completes this loop it hugs the channel's radial boundary to form a second loop inside the first as the wire feeding continues. A gap is provided in the radial boundary of the channel for receiving the core with the core's central aperture in this gap so as each loop is formed the wire in that loop passes through the core. The upper and lower boundaries of the channel are spaced apart so as to



maintain the loops in a single concentric layer around the guide and through the core. When enough wire has been fed the feeding is stopped, but the movement of the loops around the guide continues and winds (tightens) at least one new turn of wire onto the core for every complete circulation of the loops around the guide. Two or more wires can be wound onto a core at the same time with the method and apparatus according to the invention.

3,732,902

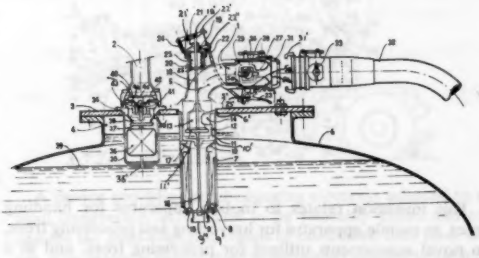
FILLING DEVICE FOR PREVENTING OVERFLOW OF LIQUID-CONTAINING TANKS

Jacques Muller, 123 Avenue de Genide Gaulle, La Garenne-Colombes, France

Filed Mar. 10, 1971, Ser. No. 122,907

Int. Cl. B67c *3/00*

U.S. Cl. 141—198 **9 Claims**



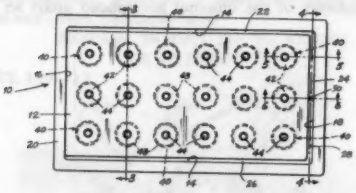
This invention relates to a filling device for preventing overflow of liquid-containing tanks during the filling thereof and includes a liquid inlet unit having a float controlled valve designed to close to prevent further flow of liquid into the tank when the liquid therein has reached a predetermined level and an air inlet unit having a float controlled valve which prevents venting of air from the tank when the liquid therein has reached a predetermined level, so that the air pressure in the tank would build up quickly to prevent introduction of additional liquid.

3,732,903

DELIVERY OF LIQUIDS INTO CONTAINERS

John E. Oates, 6329 Alamo Avenue, Clayton, Mo.

Filed June 3, 1971, Ser. No. 149,702
Int. Cl. B65b *3/06*
U.S. Cl. 141—237 1 Claim



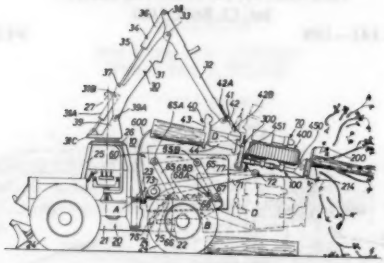
The invention provides a simple device for quickly delivering an equal predetermined volume of a liquid simultaneously into each of a plurality of identical containers. The device is particularly adapted for use in schools, hospitals, cafeterias and the like, particularly when numerous servings are required during a relatively short period of time. Use of the invention obviates the tedious and time-consuming manual operations required to fill paper cups and similar containers one at a time, and furthermore automatically insure delivery of an equal amount of a liquid into a plurality of containers simultaneously. Displacement means included in the device provide for a uniform liquid level in each container below the brim.

3,732,904

MODIFIED PROCESSOR AND COMPONENTS

Douglas D. Hamilton, Mount Royal, Quebec; Joseph J. R. Bolvin, and Domenico Benedetto, both of Montreal, Quebec, all of Canada, assignors to Canadian International Paper Company, Montreal, Quebec; North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd., Beaupre, Quebec, Canada, part interest to each

Continuation of Ser. No. 794,673, Jan. 28, 1969, abandoned.
This application Dec. 14, 1971, Ser. No. 207,990
Claims priority, application Canada, Jan. 29, 1968, 11,008
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D 16 Claims



This invention relates to mobile apparatus for handling trees, to mobile apparatus for harvesting and processing trees, to novel components utilized for processing trees, and to a method of logging.

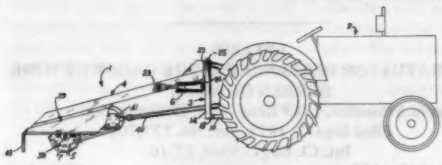
3,732,905

TREE STUMP REMOVING APPARATUS

James M. Pickel, 6714 Corrington, Kansas City, Mo.

Filed Oct. 26, 1971, Ser. No. 192,517
Int. Cl. A01g *23/06*
U.S. Cl. 144—2 Z 2 Claims

A tree stump removing apparatus operatively connected to a prime mover includes a support frame and an elongated arm having one end pivotally mounted on the support frame and extending outwardly therefrom and having a wood cutting blade rotatably mounted adjacent a free end of the arm. A member effects selected movement of the arm and cutting blade thereon in an arc about the one end of the arm during



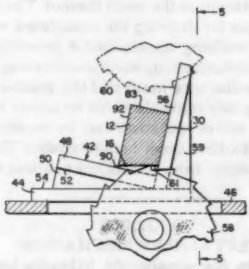
rotation of the cutting blade. The cutting blade has a plurality of circumferentially spaced cutting elements on opposite faces thereof to cut a tree stump during swinging movement of the arm about the one end thereof.

3,732,906

TRESTLE TEMPLATE FOR POWER SAWS

John Welgas, 5819 N. 6th St., Phila., Pa.

Filed Feb. 19, 1971, Ser. No. 116,812
Int. Cl. B27b *5/22*, *27/04*
U.S. Cl. 144—133 R 1 Claim



A saw template for use in fabricating trestles including a first, angularly inclined work holding surface and a second work holding surface disposed at right angles to the first surface, the first and second surfaces positioning a length of wood which serves as the trestle head in precise angular relationship to a cutting blade to permit the blade to take identical, repeated, angular cuts to receive the trestle legs therein in exact angular relationship.

3,732,907

DEVICE FOR SEPARATING SMALL PIECES FROM A WORK PIECE OF MATERIAL

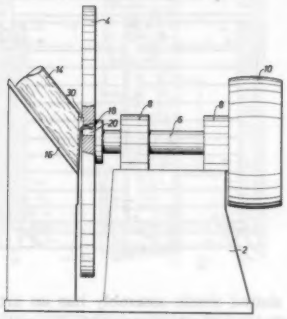
Signar Nystrom, and Gosta Larsson, both of Pitea, Sweden, assignors to Pitea Maskin-Industri, Pitea, Sweden

Filed Aug. 24, 1970, Ser. No. 66,547
Int. Cl. B27l *11/02*
U.S. Cl. 144—176 14 Claims

The invention relates to a method for separating small pieces from blanks of material by using a device comprising a plurality of cutting elements, with short cutting edges as compared with the blank, said cutting elements being so arranged on the face of a rotating cutting element holding means with their edges pointing essentially in the direction of rotation, that always a plurality of said edges are in holding engagement with the blank during the rotation of said holding means when said blank is moved along a path intersecting said face. The feeding path has a projection, the direction of which is essentially parallel to the direction of the tangents of the orbits of the cutting elements in the place where said path intersects said face.

When applicated to a method of chipping timber the invention has the consequence that an elongated chip blank is cut from a sloping end face of the log by each cutting element, the width of said chip blank as determined by the length of said cutting edge being the same as the width of a separate chip, the length of each chip being determined by the angle between the direction of the fibers in the blank and the direction of the thickness of the blank.

The invention also relates to a device for separating small pieces from a blank of material, particularly a chipping machine for chipping timber to chips, said device comprising a plurality of cutting elements, with short cutting edges as compared with at least the next smallest dimension of the blank, said cutting elements being so arranged on the face of a rotating cutting element holding means at different distances from



the axis of rotation of said holding means and with the edges pointing essentially in a direction of rotation, that always a plurality of said edges are in holding engagement with the blank during the rotation of said holding means when said blank is moved along a path intersecting said face.

The inclination of the back of the cutting element, i.e. the surface of the cutting elements directed towards the blank and the abutting the cutting edge, towards a plane including the rotational path of the cutting element is different between the cutting elements in such a manner that it increases with a reduced spacing between the cutting element and the axis of rotation of the holding means.

In another device for carrying out the method the cutting elements are arranged on a cylinder and the feeding path for the blank to be separated extends at a right angle to the cylinder axis.

3,732,908

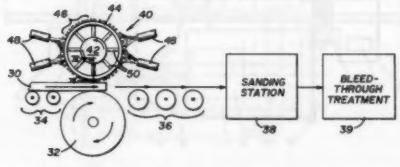
HOT-ROLL EMBOSSING METHOD

Kendall D. White, Palatine, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Apr. 23, 1971, Ser. No. 136,930

Int. Cl. B27h *1/00*

U.S. Cl. 144—328 **6 Claims**



A method of forming depressions in cellulosic panels by burning patterned holes in only a portion of the surface, preferably using rollers. Thereafter the panel may be treated at the burned areas to prevent bleed-through.

3,732,909

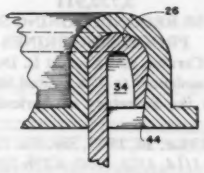
THERMPOLASTIC CONTAINER AND COVER

Ralph M. Rooke, Manchester, and James V. Davis, Bloomfield, both of Conn., assignors to The Fuller Brush Company, East Hartford, Conn.

Filed Feb. 16, 1971, Ser. No. 115,342

Int. Cl. B65d *1/00*

U.S. Cl. 150—0.5 **10 Claims**



A container and a hermetically sealable and removable cover therefor each formed of locally deformable thermoplastic material and each having depending skirts. The container skirt forms part of a rim flange with a semi-circular upper portion and the skirt is of decreasing thickness viewed downwardly. The closure skirt forms an outer wall of a downwardly open groove for receiving the container rim flange and which has a complementary semi-circular top groove wall. The cover skirt increases gradually in thickness viewed downwardly and serves to flex the container skirt inwardly on engagement of the cover whereby to provide a resilient gripping engagement of the cover and container.

3,732,910

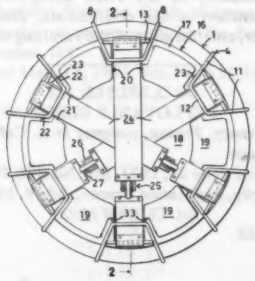
ANTI-SKID TRACTION DEVICE

Arthur Cahlan Mathews, 15 Cordova Court, Portola Valley, Calif.

Filed Sept. 2, 1971, Ser. No. 177,290

Int. Cl. B60c *27/12*

U.S. Cl. 152—225 **10 Claims**



A device providing road-engaging elements adapted to extend transversely across and to be yieldably drawn and held against the road-engaging treads of pneumatic tires on a vehicle. The device is constructed to be readily applied to each tire from the outer side thereof relative to the side adjacent the vehicle body, without fastening it to the wheel. Said road-engaging elements are each generally of U-shape to straddle the tire with the closed end of the U extending across the tread and one of the legs at each opposite side, providing an inner leg at the inner side and an outer leg at the outer side, and the elements are at opposite sides of the tire in pairs spaced around the circumference. The device includes a member engageable with, but not securable to the outer side of the tire, and yieldable tensioning means at the outer side only of a wheel, yieldably hold said member substantially coaxial with the wheel and against said outer side of the tire, and yieldably

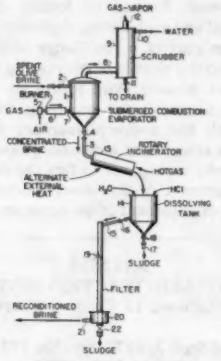
hold the elements on the tire, which tensioning means, outer legs, and said member are arranged and formed to coact to hold the road-engaging elements substantially uniformly tight against the road-engaging surface of the tire tread from side-to-side of the tread irrespective of the degree of radially inwardly directed tension applied to said outer legs by said tensioning means. Thus the inner legs on said elements may be quite short.

3,732,911

PROCESS FOR RECONDITIONING SPENT OLIVE-PROCESSING BRINES

Edison Lowe, El Cerrito, and Everett L. Durkee, El Sobrante, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 16, 1971, Ser. No. 124,895
Int. Cl. B01d *1/14, 1/02, 1/00;* **A23b** *7/00;* **C10b** *47/00*
U.S. Cl. 159—47 WL **2 Claims**



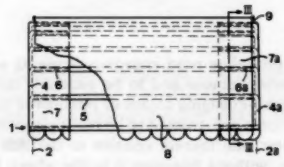
Spent brines—for example, those derived from olive processing plants—are reconditioned by applying a series of steps: Concentration of the brine using submerged combustion, incineration of the concentrate, dissolution of the residue in water, and filtration of the resulting solution.

3,732,912

DEPLOYABLE BLIND

Jean Collet, Annecy, France, assignor to A. Collet & Fils S.A., Annecy, France

Filed June 25, 1971, Ser. No. 156,705
Claims priority, application France, July 9, 1970, 7026562
Int. Cl. E04f *10/06*
U.S. Cl. 160—55 **12 Claims**



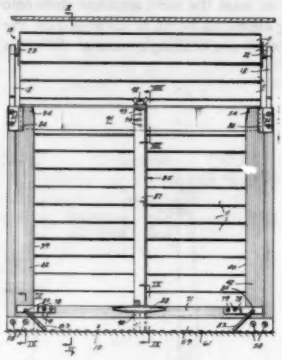
This invention relates to a deployable blind comprising a cloth-supporting frame of adjustable width made up of a series of pivoting ribs joined by the ends of their lateral uprights and the rectilinear part of which, parallel to the pivoting axis of the said ribs, is telescopically adjustable in length; two extendable independent side cloths, fixed on each of the corresponding lateral uprights of the said ribs; and a covering cloth, rolled out from a roller, having a width substantially equal to the minimum length of the telescopically adjustable part of the ribs and independent of the side cloths which it covers at least partially regardless of the width given to the blind and being fixed only to the first of the ribs.

3,732,913

ROLL-UP SLATTED SHADE ASSEMBLY

Walter A. Wrono, 3030 Marcus Drive, Building, Apt. 106, North Miami Beach, Fla.

Filed May 27, 1971, Ser. No. 147,431
Int. Cl. E06b *9/08*
U.S. Cl. 160—133 **24 Claims**



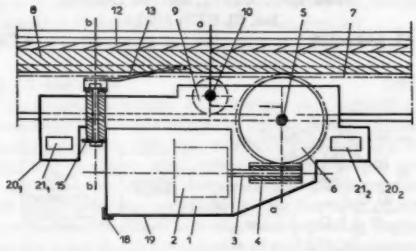
A roll-up slatted shade assembly has an articulated slat screen anchored to a wind-up spring head barrel journalled on a shaft carried by arms projecting from the upper ends of vertical guide tracks, with releasable means arranged to lock the pull bar of the screen in the closing position of the screen and comprising pins for coupling members on the pull bar to the lower end portions of the track bars, such members also serving as stops to limit opening movement of the screen by engagement with fixed stops on the upper end portions of the track bars. Silent, rattle-free operation of the screen is assured by soundproofing means. Means are provided for connecting a plurality of assemblies or units in an enclosure orientation. A hurricane brace bar frame structure is provided.

3,732,914

CURTAIN ROD WITH ELECTRICALLY DRIVEN CARRIAGE

Michel Flageollet, 19 rue de Verdun, Nancy, France

Filed May 6, 1969, Ser. No. 822,268
Claims priority, application France, June 16, 1968, 68151973; Aug. 8, 1968, 68162253
Int. Cl. A47h *1/00*
U.S. Cl. 160—331 **2 Claims**



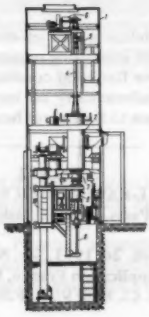
The disclosure concerns a curtain rod assembly with an electrically driven carriage in which clutching means are provided between the motor and means for driving the carriage along the rod so that the curtain can be manipulated in the case of current failure of breakdown of the motor.

3,732,915

VACUUM ARC FURNACE

Anatoly Ivanovich Lugovoi, 4 Minaevsky proezd, 6, kv. 1, Moscow; Grigory Alexandrovich Kharatian, Khotkovo, ulitsa Lenina, 4, kv. 13, Moskovskaya oblast; Boris Izidorovich Izraelson, Junykh Lenintsev, 92, kv. 49, and Vera Nikolaevna Kvashnina, Dmitrovskoe shosse, 7/2, kv. 127, both of Moscow, all of U.S.S.R.

Filed Oct. 7, 1971, Ser. No. 187,271
Int. Cl. B22d 27/02
U.S. Cl. 164—252 1 Claim



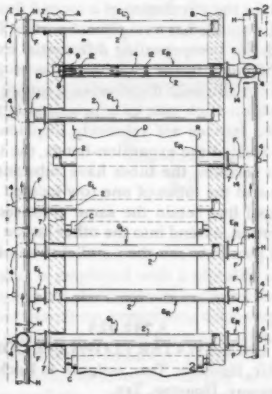
A furnace for consecutive primary melting and secondary remelting is fitted with a cooler and an ingot withdrawal gear mounted on a supporting swing column and has a changeable mould with a stationary base plate for the secondary remelting of metal; the mould is set up on the said column instead of the cooler and the ingot withdrawal gear.

3,732,916

HEAT EXCHANGE METHOD AND APPARATUS

Troy Cope, Salem, Ohio, assignor to The Electric Furnace Company, Salem, Ohio

Filed Jan. 29, 1971, Ser. No. 110,873
Int. Cl. F28f 27/02
U.S. Cl. 165—1 17 Claims



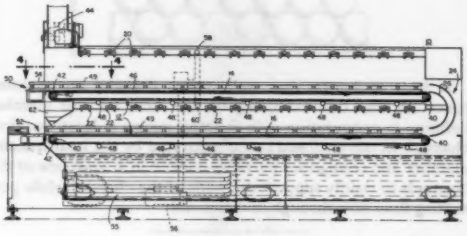
Cooling tubes of the type spaced along the cooling section of a continuous furnace are provided with means for changing the effective cooling length to control cooling of a workpiece passing through the cooling section.

3,732,917

METHOD OF AND APPARATUS FOR ALTERING THE TEMPERATURE OF CONTAINERS

Hans D. Deubel, Milwaukee, Wis., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed June 25, 1971, Ser. No. 156,617
Int. Cl. F28f 7/00
U.S. Cl. 165—1 16 Claims



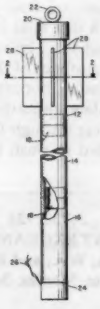
A double deck can warmer having spray heads mounted above an upper conveyor for conveying cans in one direction and a lower conveyor for conveying cans in the opposite direction. The arcuate chute communicates with the upper conveyor and the lower conveyor so as to move cans from the upper conveyor to the lower conveyor while effecting an inversion. As the cans move along the upper conveyor, one end of the cans are sprayed with a warming fluid from nozzles located above the conveyor. As the cans are inverted, the liquid contents are agitated. The opposite ends of the cans are now sprayed with warming fluid from the nozzles located above the lower conveyor.

3,732,918

BOTTOM-FREEZING APPARATUS

Thomas L. Culbertson, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 11, 1971, Ser. No. 123,312
Int. Cl. F28d 15/00
U.S. Cl. 165—106 4 Claims



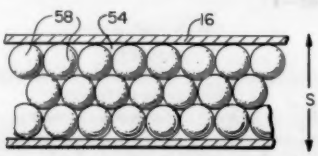
A bottom-freezing cell which operates on the liquid natural convection principle but contains no internal ducting and no insulating dividers. Additional body sections may be connected to the cell to obtain any desired cell length.

3,732,919

HEAT EXCHANGER

Joseph R. Wilson, Potzleinsdorferstrass 10/6/5, Vienna, Austria

Filed July 1, 1970, Ser. No. 51,650
Int. Cl. F28f *3/00*
U.S. Cl. 165—110 **8 Claims**



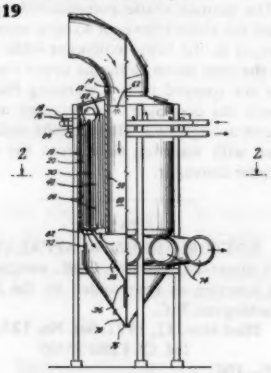
A heat exchanger has wall means defining an enclosed space, at least one extending surface heat transfer member defining in cooperation with the wall means at least two flow channels in the enclosed space separated by the heat transfer member and contiguous particles packed in at least one of the channels to rigidly support the walls of the channel while permitting fluid flow through said channel.

3,732,920

HEAT EXCHANGER

J. D. Kimmel, Houston, Tex., assignor to Thermotics, Inc., Houston, Tex.

Filed June 21, 1971, Ser. No. 154,732
Int. Cl. F28b *19/00*
U.S. Cl. 165—119 **12 Claims**



A heat exchanger including a series of concentric chambers of circular cross-section through which a first fluid is adapted to flow and a plurality of conduits, disposed within the chambers, through which a second fluid is adapted to flow. The conduits having fins such that heat is exchanged between the first fluid and the second fluid by means of convection and conduction through the surfaces of the conduits and fins. The heat exchanger also including hoppers below the chambers to collect the solid particulate impurities as they separate from the first fluid while flowing through the chambers and a water bath which may be added to wash the impurities out of the first fluid.

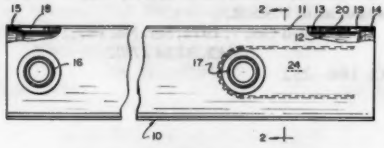
3,732,921

HEAT EXCHANGER

Edwin J. Hilicki, Racine, Wis., and Harry J. Schroeder, Lake Bluff, Ill., assignors to Modine Manufacturing Company, Racine, Wis.

Filed June 30, 1971, Ser. No. 158,297
Int. Cl. F28g *13/00*
U.S. Cl. 165—154 **4 Claims**

A heat exchanger in which the exchanger comprises inner and outer tubes spaced apart to define a fluid passage but sealed at the opposite extremities of the passage, a pair of spaced fittings communicating with the fluid passage for flow of fluid into, through and from the passage, a fluid turbulizer in the passage comprising flat stock with laterally projecting integral strips to create turbulence in the fluid flowing through the passage and resulting superior heat transfer with the turbulizer having end portions terminating short of the extremities



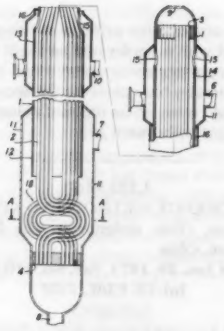
of the passage to define a pair of end header spaces and a direct flow path from one fitting means and the nearer header space in collapsed or flattened condition so that the strips in this area provide substantially no impediment to fluid flow from the fitting means to the nearer header space.

3,732,922

HEAT-EXCHANGER MODULE

Pierre Pouderoux, Paris, France, assignor to Stein Industrie, Paris, France

Filed Feb. 26, 1971, Ser. No. 119,124
Claims priority, application France, Mar. 6, 1970, 700821
Int. Cl. F28f *9/22;* **F28d** *7/08*
U.S. Cl. 165—158 **5 Claims**



A tube bundle for the circulation of a first fluid is disposed within a shell for the circulation of a second fluid. At least one end of the tube bundle has a rectilineal portion followed by expansion-bends for compensating differential expansions. The tubes are subdivided in the vicinity of the rectilineal portion into two half-bundles each disposed on a square lattice with an identical pitch on each side of a principal lattice line along which the two lattices are relatively displaced by one half pitch. At the level of the expansion-bends, the two lattices are in interjacent relation, the tubes have substantially the same cross-section and the tubes of one row located at right angles to the principal line retain the same cross-section as in the rectilineal portion, extend into the other lattice in the plane of said row and pass between the parallel rows of the other lattice.

3,732,923

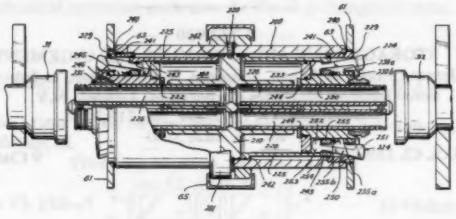
REMOTE UNDERWATER FLOWLINE CONNECTION

John H. Fowler, Houston, Tex., assignor to Rockwell Manufacturing Company, Houston, Tex.

Filed Nov. 1, 1967, Ser. No. 679,858
Int. Cl. E21b *33/035*
U.S. Cl. 166—.6 **50 Claims**

A method and apparatus related thereto for remotely connecting flowlines to an underwater wellhead. A connector

support cradle is mounted to a well conductor. A guide system is provided to guide into place a remotely operable underwater tree, flowline loops, and connector tree hub which is connected to the flowline loops. The tree hub is guided and latched into one end of the support cradle. Then one end of underwater flowlines attached to a flowline connector hub is



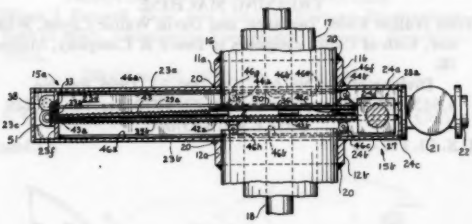
lowered with the aid of the guide system into engagement with the opposite end of the support cradle. Finally, a hydraulically operable connector is guided into the cradle between the tree hub and flowline hub. Pressure is supplied to the connector through conduits to cause the connector to sealingly engage the hubs providing flow communication between the tree and flowlines.

3,732,924

APPARATUS FOR ATTACHING TO THE OUTER OF A PLURALITY OF TUBULAR MEMBERS AND OF CUTTING THROUGH, VALVING CLOSED, AND DIVERTING MATERIAL FLOW FROM ALL OF THE TUBULAR MEMBERS

Francis M. Chelette, 1910 Crosby Road, Carrollton, Tex., and Charles G. Goodwin, 502 Scott, Baytown, Tex.

Filed Feb. 17, 1971, Ser. No. 115,977
Int. Cl. E21b *29/00*
U.S. Cl. 166—55 **19 Claims**



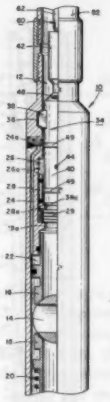
The apparatus is employed with a plurality of substantially parallel extending tubular members in the method of diverting the flow matter therefrom, comprising disposing the apparatus in manner to sealably attach the apparatus housing around the outermost of the tubular members, projecting a housing carried severance means to sever the tubular members as a closure plate is moved after the severance means, and at the end of severance is cammed into outer tubular member closing position, thereby closing off the flow of matter from original direction through the tubular members and diverting the flow in a direction sidewardly through the housing from the original direction of flow.

3,732,925

APPARATUS FOR CONDUCTING OPERATIONS IN A WELL THROUGH A NORMALLY CLOSED VALVE

William E. Kanady, Bellaire, Tex., assignor to Esso Production Research Company, Houston, Tex.

Division of Ser. No. 71,553, Sept. 11, 1970. This application Jan. 18, 1972, Ser. No. 218,677
Int. Cl. E21b *33/00*
U.S. Cl. 166—72 **6 Claims**



An operation is conducted in a well below a normally closed valve therein having a full open bore therethrough which involves running a tubular member having a passageway therethrough into the well from a reel at the earth's surface and releasably connecting the tubular member to the normally closed valve. Fluid pressure introduced through the tubular member from the earth's surface or before the valve is introduced to the well is provided to open the valve and thereafter a well operation is performed through the full open bore and below the valve. The well operation may include a workover operation such as acidizing, cementing, stimulating, sand consolidation, perforating, and the like.

3,732,926

METHOD FOR RECOVERY OF HYDROCARBONS UTILIZING STEAM INJECTION

Alfred Brown; Joseph T. Carlin; Marc F. Fontaine, and Stewart Haynes, Jr., all of Houston, Tex., assignors to Texaco Inc, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,888
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 **12 Claims**

A method of recovering hydrocarbons from a subterranean hydrocarbon-bearing formation wherein a mixture of steam and a minor amount of an interfacial tension reducer, such as quinoline, etc. is introduced into the formation and oil displaced through the formation is recovered through a production well. Preferably, the formation is heated prior to the introduction of the steam-interfacial tension reducer mixture.

3,732,927

PLUGGING SOLUTION PRECIPITATION TIME CONTROL BY CHARGE NEUTRALIZATION

Edwin Allen Richardson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed July 29, 1971, Ser. No. 167,460
Int. Cl. E21b *33/138*
U.S. Cl. 166—294 **6 Claims**

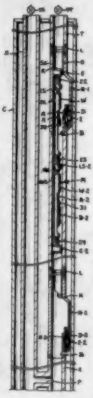
The precipitation time of a precipitate-forming aqueous solution containing a polyvalent metal that precipitates as a gelatinous metal hydroxide and a reactant that raises the pH to cause the precipitation is decreased by dissolving an incompletely dissociated polyvalent acid in the aqueous solution.

3,732,928

METHOD OF AND APPARATUS FOR REMOVING AND POSITIONING WELL TOOLS IN OFFSET LANDING NIPPLES

Phillip S. Sizer, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed June 21, 1971, Ser. No. 154,999
Int. Cl. E21b *43/12*
U.S. Cl. 166—315 **14 Claims**



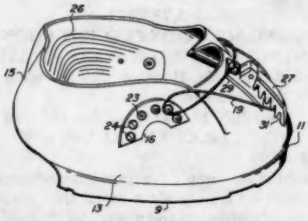
A method and apparatus for use in connection with offset landing nipples connected in a flow conductor of a pumpdown well installation for installing and removing tools therein, including a tandem kick-over running and pulling tool arrangement for removing a well device from and subsequently installing another well device in the side pocket of offset landing nipple housings, and the method of changing the well tool positioned in the side pocket of the offset housings and for installing another well device in the receptacle from which the first device was removed, both operations being effected during a single trip of the pump-down tools into and out of the well flow conductor string. The apparatus and method also contemplates preventing flow of fluids from the producing flow conductor the exterior thereof through the lateral inlet opening of the side pocket landing nipple or receptacle of the housing, through a large differential may exist between the interior and exterior of the flow conductor.

3,732,929

MOLDED HORSE BOOT

Neel W. Glass, Los Alamos, N. Mex., assignor to Les-Kare, Inc., Los Alamos, N. Mex.

Continuation-in-part of Ser. No. 93,119, Nov. 27, 1970, Pat. No. 3,703,209. This application Dec. 29, 1971, Ser. No. 213,392
Int. Cl. A01l *03/00*; B68c *05/00*
U.S. Cl. 168—18 **5 Claims**



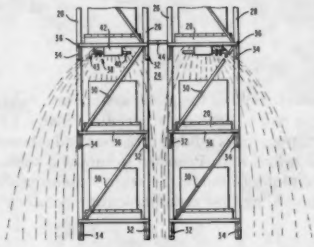
A horse boot of molded composition having a sole and walls which substantially conform to the shape of a horse's foot and having reentrant folds in the walls substantially where the side walls meet the front wall to enable the boot to be enlarged at the top to permit slipping the same on a horse's foot, tensioning means for snugging the walls of the boot around the horse's foot and a substantially horizontally disposed strap disposed adjacent the interior side and rear walls of the boot and adjustably attached to the tensioning means at locations on the side walls which are proximate the reentrant folds.

3,732,930

STORAGE RACK AND SPRINKLER ARRANGEMENT

Jerome Frank D'Anneo, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,321
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **9 Claims**



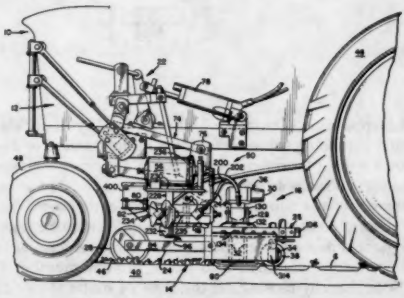
A storage rack and sprinkler arrangement wherein two rows of storage racks are arranged in spaced relation so that a narrow flue space exists between the rows. Each rack has a plurality of horizontal shelves arranged in a vertical tier and upright support members supporting the shelves and spaced to separate the tier of shelves into bays. At least one sprinkler head with a heat actuated device which initiates the water flow is mounted on the underside of each alternate shelf in each bay. A heat deflecting means, typically a plate of fire resistant material is associated with the shelf immediately above each sprinkling head which closes the flue space. The sprinkler heads are arranged to provide a spray when actuated over the shelf beneath the head, the aisle and the flue space.

3,732,931

ELECTRONICALLY CONTROLLED ROW CROP THINNING MACHINE

Fred Walker Field, Torrance, and David Walter Cayon, Whittier, both of Calif., assignors to Deere & Company, Moline, Ill.

Division of Ser. No. 601,139, Dec. 12, 1966, Pat. No. 3,543,860. This application Oct. 22, 1970, Ser. No. 83,249
Int. Cl. A01b *63/00*
U.S. Cl. 172—6 **4 Claims**



An electronic control circuit including a sensing circuit for comparing an observed value of electrical resistance to a

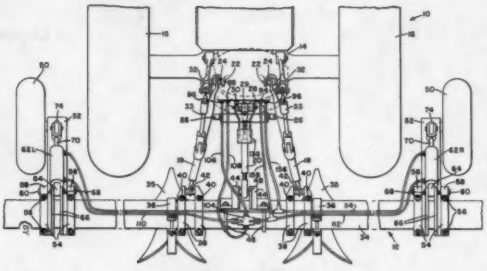
predetermined threshold value and producing an output signal only when the observed value passes the threshold value; a timing circuit for measuring a predetermined time interval after the production of each such output signal; a feedback circuit for disabling the sensing circuit under control of the timing circuit during the continuance of each such time interval; a triggering flip-flop responsive to each output signal from the sensing circuit for changing its state; and a power switch and solenoid means controlled by the flip-flop for initiating a mechanical operation each time the flip-flop changes its state.

3,732,932

SIDE DRAFT CONTROL SYSTEM FOR A TRACTOR AND EARTH-WORKING IMPLEMENT

Robert Otto Taube, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 17, 1971, Ser. No. 143,890
Int. Cl. A01b *63/112*
U.S. Cl. 172—7 **16 Claims**



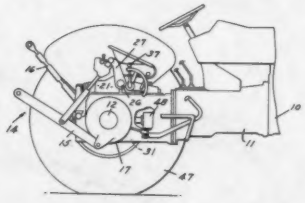
A side draft control device for wide implements automatically adjusts the implement wheels to raise the high draft side of the implement and lower the low draft side of the implement to maintain a balanced draft load on the tractor and an average working depth of the implement. The system uses lateral movement of the upper link of the tractor hitch to operate switches in the control circuits for a double solenoid valve which selectively and alternately interconnects the cylinders for the implement wheels with the tractor hydraulic pump and reservoir.

3,732,933

TRACTOR HYDRAULIC LIFT SYSTEM

William J. Foxwell, Troy, and James D. Parsons, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 11, 1971, Ser. No. 152,316
Int. Cl. A01b *63/112*
U.S. Cl. 172—7 **5 Claims**



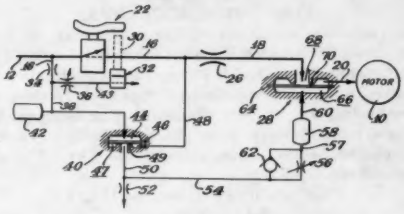
A tractor hydraulic lift system in which the lift system may be controlled by driveline torque, by draft sensed by one of the tractor hitch links or by a position control cam. The mechanism is arranged to permit combinations of position control with draft control and with torque control.

3,732,934

FLUID-DRIVEN TOOL WITH BUILT-IN WORK CONTROL MECHANISM

Karl A. Brandenberg, Hayward, Calif., assignor to The Aro Corporation, Bryan, Ohio

Continuation-in-part of Ser. No. 853,632, Aug. 28, 1969, Pat. No. 3,580,285. This application Mar. 29, 1971, Ser. No. 128,899
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **24 Claims**



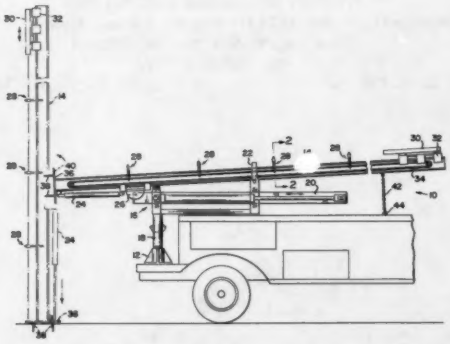
A work control mechanism for a pneumatically driven tool such as an impact wrench is incorporated as part of the tool. The motor for the tool commences operation upon movement of a manual trigger mechanism on the tool. As the motor meets increased resistance in its operation, the back pressure in the main fluid supply line to the motor increases. This increase in pressure is sensed and subsequent to the sensing of this increase, a time delayed signal operates a control valve in the main fluid flow line. Operation of this control valve opens the fluid flow circuit to the motor, thereby terminating operation of the motor even though the manual trigger for the tool remains depressed.

3,732,935

GROUND ROD DRIVER

Elvin H. Gibson, Hillsborough, Fla., assignor to Resources, Incorporated, Tampa, Fla.

Filed July 2, 1971, Ser. No. 159,108
Int. Cl. E21c *11/02*
U.S. Cl. 173—28 **11 Claims**



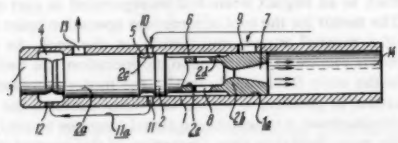
A device for driving ground rods of the type to be mounted on a suitable carriage or vehicle. A boom to engage ground rods as the rods are driven is attached to an adjustable horizonal beam. The adjustable horizonal beam interconnects the boom with a vertical cylinder attached to a base. The base interlocks the entire device to the bed or frame of the carriage. The movement of the horizonal beam and rotation of the vertical cylinder combined as a means of positioning the

boom relative to the carriage. Attached to the boom is a hydraulically driven impact hammer for power driving the ground rods. The boom is pivotally mounted on the horizonal beam so that the boom may be carried in a substantially horizonal position while in transit and rotated to a vertical position when in use. Also included is a vertical adjustment means mounted on the beam so that the boom may be adjusted vertically to engage with the ground or supporting surface on which the vehicle rests.

3,732,936
PERCUSSION MECHANISM

Boris Vasilievich Sudnishnikov, Krasny prospekt, 56, kv. 59; Alexander Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 44; Anatoly Mikhailovich Petreev, ulitsa Sibiryakov-Gvardeitsev, 8, kv. 59; Konstantin Stepanovich Gurkov, ulitsa Dershavina, 19, kv. 68; Konstantin Konstantinovich Tupitsyn, ulitsa Krylova, 3, kv. 37, and Vladimir Vasilievich Klimashko, ulitsa Novogodnyaya, 44, kv. 23, all of Novosibirsk, U.S.S.R.

Filed Feb. 10, 1971, Ser. No. 114,115
Int. Cl. B25d *9/14*
U.S. Cl. 173—137 **1 Claim**

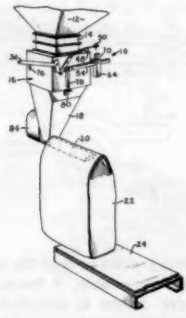


A percussion mechanism, for making holes in the ground by compacting the ground, having a housing connected with a working unit and accommodating a striker adapted to deliver impacts upon the working unit while reciprocating inside the housing under the effect of the working fluid; the striker having a tail piece provided with a nozzle through which the working fluid escapes to develop the reactive thrust of the striker, while in the portion of the housing behind the nozzle there is a through opening adapted for the removal of the jet stream, leaving the nozzle.

3,732,937
WEIGHT SCALE FOR BAG PACKER

Murland L. Taylor, 2521 Washington, Parsons, Kans.

Filed Aug. 9, 1971, Ser. No. 170,264
Int. Cl. G01g *13/02*
U.S. Cl. 177—68 **12 Claims**



Apparatus for delivering a predetermined weight of material to a receptacle therefor utilizes a pair of rotatable scale beams with poises disposed on the beams. A scale is included on the face of each beam thus allowing the effective counterweight of the poises to be divided between the beams and the scales on each beam to be divided into relatively small weight increments for increased accuracy. The beams are rotated about an axis when the weight of the filled receptacle exceeds the effective counterweight of the poises. The major portion of the weight of both the filled receptacle and the poises is always below the axis of rotation of the beams to assure that the center of gravity of the forces acting on the beam is always below this axis. This results in an inherent damping effect on any swinging movement of the beams and eliminates the need for a separate damping mechanism. The material delivered to the receptacle passes through a control opening which is closed by a swingable gate in response to rotation of the beams when the predetermined weight is reached.

3,732,938
WHEELCHAIR WEIGHING PLATFORM

Wayne E. Nelson, 3112 Wulder Avenue, Sarasota, Fla.

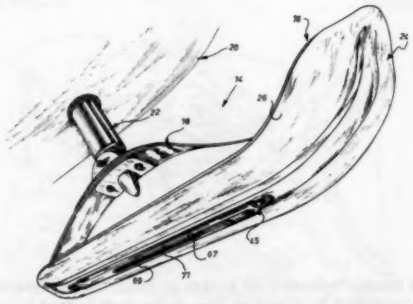
Filed June 1, 1971, Ser. No. 148,538
Int. Cl. G10g *19/02, 21/22*
U.S. Cl. 177—126 **4 Claims**

A device fore modifying conventional weighing scales so that a person confined to a wheelchair may weigh himself without assistance from others while in the wheelchair. A platform for supporting a wheelchair or like device is fixed to connecting cross members which in combination with a plurality of support beams form a base for mounting the platform on weighing scales. The cross members and support beams are designed so that they may be adjusted to allow mounting the platform on scales of various size and shapes.

3,732,939
RUNNER SHOE FOR SNOWMOBILE

Jean-Paul Samson, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Jan. 27, 1971, Ser. No. 110,053
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **12 Claims**



The disclosure herein describes a runner blade adapted to be secured to the underface of a snowmobile ski; the blade

consists of a longitudinal rigid member with spaced-apart bolts secured on its upper part for fastening the blade to the ski and with a groove longitudinally extending in its lower part and receiving a plurality of adjacent pieces of cemented carbide. Each carbide has its upper faces brazed to corresponding faces in the groove and its lower faces defining a cutting edge extending below the rigid member and adapted to cut into the icy surface over which the snowmobile runs; a preferred carbide is a tungsten carbide known under the trademark "Carboloy." In providing increased steering control to the skis, an important safety feature is now added to the snowmobile; furthermore, such a construction greatly simplifies the assembling of the blade to the ski and offers a sturdier assembly to oppose lateral forces exerted on the blade.

3,732,940

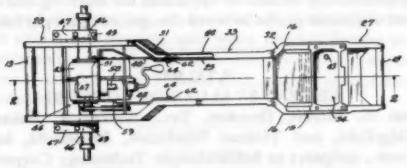
TRACTOR SUBASSEMBLY

Warren H. Price, Sheboygan, Wis., assignor to Gilson Bros. Co., Plymouth, Wis.

Division of Ser. Nos. 880,479, Dec. 10, 1969, Pat. No. 3,604,527, and Ser. No. 672,095, Oct. 2, 1967, abandoned. This application Feb. 4, 1971, Ser. No. 112,750

Int. Cl. B60k *5/12*

U.S. Cl. 180—64 R **3 Claims**



The combination of an engine and a wheeled framework in which the wheeled framework has laterally spaced vertical side beams and the engine has a separable base which is integrated with the framework to stiffen and re-enforce the framework. The engine base comprises a hollow, upwardly open box nested between the beams and has vertical end walls fastened in face relation to the vertical frame beams. The hollow interior of the base constitutes an oil pan for the engine.

3,732,941

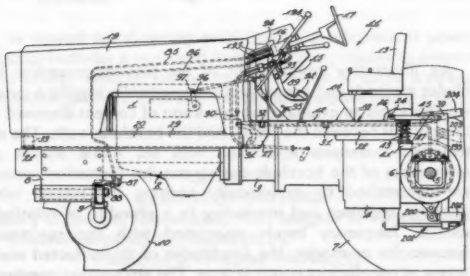
VEHICLE CHASSIS RESILIENTLY SUPPORTED ON MAIN FRAME

Owen R. Davis, Waukesha; Robert C. Haupt, Milwaukee; Kenneth N. Hansen, Waukesha, and Michael L. Slosirek, Milwaukee, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 18, 1971, Ser. No. 144,451

Int. Cl. B62d *33/06*

U.S. Cl. 180—89 R **18 Claims**



A resiliently mounted chassis including an operator station and a portion of the chassis extending from said operator station with resilient means supporting said chassis on the main frame of the vehicle for insulating the operator from vibration and shock inherent with running of the engine and power transmission, particularly while the vehicle is in operation on rough terrain.

3,732,942

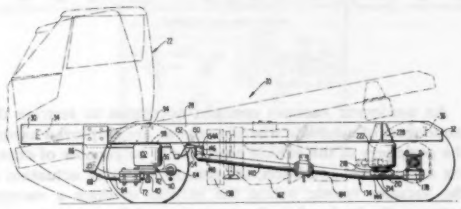
REMOVABLE VEHICLE CHASSIS SUB-FRAME WITH ENGINE

Dean Hobbensiefken, Route 1, Box 241, Lyons, Oreg.

Filed Dec. 16, 1970, Ser. No. 98,625

Int. Cl. B60k *5/00*

U.S. Cl. 180—11 **8 Claims**



A heavy duty motor vehicle has a main frame with a forward axle and steerable ground wheels. A power unit sub-frame carrying a rear axle is releasably secured to the main frame, and includes an engine assembly which is located at an intermediate position between the axles. The unit may also include a fifth wheel assembly whereby it becomes a towing vehicle for a further trailer unit or units.

3,732,943

AUTOMOBILE VEHICLES DRIVEN BY A ROTARY PISTON ENGINE

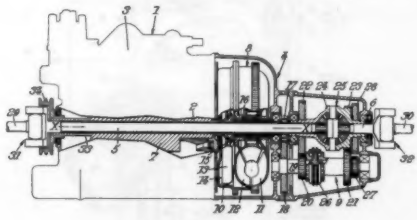
Jean Panhard, Paris, France, assignor to Societe de Constructions Mecaniques Panhard & Levassor, Paris, France

Filed Feb. 23, 1971, Ser. No. 117,949

Claims priority, application France, Feb. 24, 1970, 7006563

Int. Cl. B60k *5/02, 5/04*

U.S. Cl. 180—55 **9 Claims**



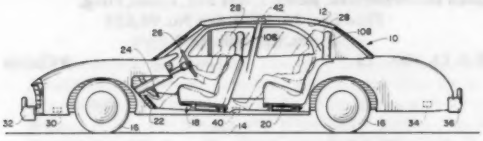
An engine has at least one rotary piston and a hollow rectilinear output shaft. The vehicle wheels are driven by two coaxially aligned transmission shafts coupled to the output shaft through a variable ratio transmission mechanism. One transmission shaft is coaxially inside the output shaft which it entirely traverses. Viewed axially, there are seen successively, the projecting portion of the transmission shaft, the engine, the transmission mechanism and the projecting portion of the second transmission shaft. The arrangement reduces the bulk of the propulsion unit group to that of the engine itself. Preferably a differential and a torque converter are included in the transmission mechanism.

3,732,944

AUTOMATIC VACUUM RESTRAINT APPARATUS

Giles A. Kendall, Burbank, Calif., assignor to Menasco Manufacturing Company, Burbank, Calif.

Filed Apr. 12, 1971, Ser. No. 133,013
Int. Cl. B60r 21/10
U.S. Cl. 180—103 9 Claims



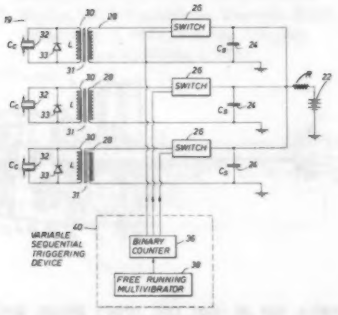
An automatic vacuum restraint apparatus to restrain the passengers of a vehicle wherein sensors are employed around the periphery of the vehicle structure to be capable of denoting an unstable condition, the sensors effecting actuation of the vacuum system within the vehicle to draw a vacuum between the body of each passenger and its respective passenger seat.

3,732,945

SWITCHING CIRCUIT CONTROLLED STEERED BEAM TRANSDUCER

Jean C. Lavigne, Arlington, Mass., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 20, 1970, Ser. No. 38,983
Int. Cl. G01v 1/40
U.S. Cl. 181—.5 AG 8 Claims



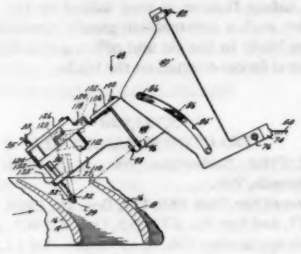
An improved steered beam transducer which utilizes ceramic elements is described. A relatively low voltage power supply is utilized to excite the ceramic elements through a step-up transformer. The inductance of the secondary of the transformer is chosen to produce resonance with the ceramic elements at the operating frequency. Steering is accomplished by time delayed switching in the low voltage primary where the switches are controlled by variable delay means.

3,732,946

ULTRASONIC NOZZLE MEASURING SYSTEM

Edmund McKnight, Nahant, and Michael Lee Tuttle, Ipswich, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 25, 1971, Ser. No. 146,671
Int. Cl. G01b 17/00
U.S. Cl. 181—.5 NP 6 Claims



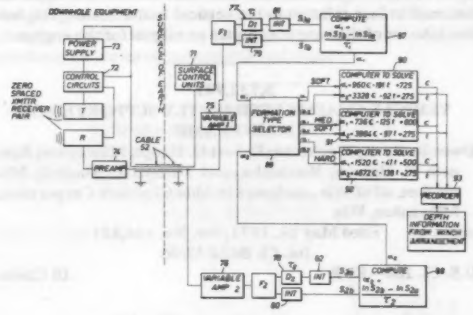
This is a system for ultrasonically measuring the minimum areas of flow between spaced apart partitions wherein the partitions are cooperatively arranged to define individual nozzles. The system may include an apparatus for inserting and orienting an ultrasonic probe between the spaced apart partitions.

3,732,947

CEMENT EVALUATION LOGGING

James H. Moran, Houston, Tex.; Barkev Y. Bakamjian, Ridgefield, and Thomas Muricchio, Brookfield, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,290
Int. Cl. G01v 1/22
U.S. Cl. 181—.5 AC 28 Claims



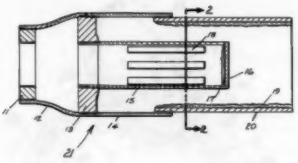
An illustrative embodiment of the present invention includes methods and apparatus for acoustically logging a cased well borehole to evaluate the condition of cement disposed in the annulus between the casing and the borehole walls. The attenuation constants associated with the radial modes or resonances of the borehole-casing-annulus formation system are determined by periodically exciting the system with acoustic impulses and measuring in a plurality of relatively narrow frequency bands associated with the resonance frequencies or modes, the amplitudes of the reflected sonic waves at two distinct points in time. The attenuation constants so measured may then be used in apparatus designed to calculate cement effectiveness by determining the cement thickness and width of annulus between the casing and the cement.

3,732,948

MUFFLER FOR ALUMINUM CELL TAPPING CRUCIBLE

Charles Michael Benton, and Howard E. Niehaus, both of Owensboro, Ky., assignors to National-Southwire Aluminum Company, Carrollton, Ga.

Filed Sept. 20, 1971, Ser. No. 181,777
Int. Cl. F01n 1/10
U.S. Cl. 181—36 R 7 Claims



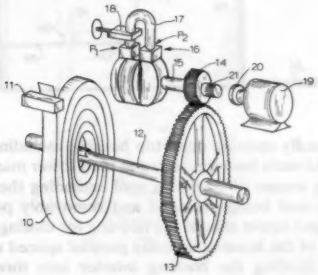
An apparatus for reducing the noise level of a stream of air exiting a tapping crucible in aluminum reduction operations. The air is used to create a vacuum in the tapping crucible, thereby promoting siphon removal of molten aluminum from the reduction cell. The apparatus of this invention, commonly referred to as a muffler, comprises an outer conduit having entrance and exit openings, an inner conduit centrally attached within said outer conduit, said inner conduit having an entrance opening, an exit opening enclosed with a cup welded to said inner conduit, and exhaust slots equally spaced around said inner conduit's circumference.

3,732,949

SPRING DRIVE APPARATUS AND METHOD

Clarence O. Williams, 204 Kirkwood Avenue, Rocky Mount, N.C.

Filed June 22, 1971, Ser. No. 155,493
Int. Cl. F03g 1/00
U.S. Cl. 185—40 R 3 Claims



A wound spiral spring employed as a mechanical power source includes a regulated fluid circulating means to control the energy released as the spring unwinds to drive a power consuming device such as a vehicle, lawn mower and the like.

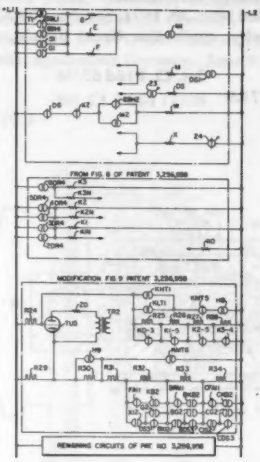
3,732,950

ELEVATOR SYSTEMS

Henry C. Savino, Hackensack, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1971, Ser. No. 205,191
Int. Cl. B66b 1/00
U.S. Cl. 187—29 10 Claims

An elevator system having a bank of elevator cars which, under predetermined system conditions, become available for assignment and dispatching from the landings served thereby. The elevator cars are utilized more beneficially in certain types of structures, by modifying the basis for determining car availability, and the basis for determining the existence of a predetermined demand for service, upon the occurrence of predetermined traffic conditions and car positions.

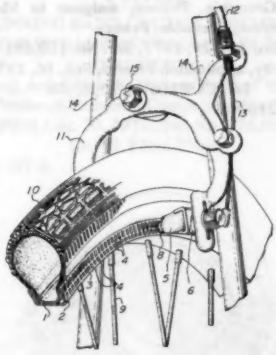


3,732,951

BRAKE MEANS FOR A BICYCLE

Kotaro Hata, Nara-shi, and Toshikazu Fujii, Yao-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 815,671, April 14, 1969, abandoned.
This application Feb. 19, 1971, Ser. No. 117,104
Claims priority, application Japan, Oct. 18, 1968, 43/31944; Mar. 26, 1969, 44/23437
Int. Cl. B62l 1/10
U.S. Cl. 188—24 3 Claims



Brake means for a bicycle having a recessed portion provided on either one of the contact portions between a wheel rim and a brake rubber piece and extending in the direction of the periphery of said rim, the other of the contact portions being provided with at least one projection adapted to be brought into engagement with said recess, the arrangement being such that a wedging action is created when the recess and the projection are pressed with each other to produce a strong braking force. Further, the wheel rim may be provided on its recess or projection with uneveness across the recess or projection so as to facilitate draining of water and prevent the braking effect from being reduced in a rainy weather.

3,732,952

BRAKE ADJUSTERS

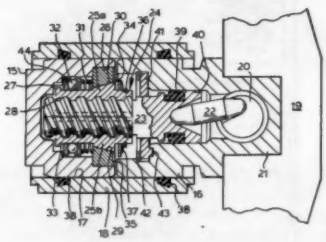
Anthony Asquith, Nuneaton, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 30, 1971, Ser. No. 129,336

Claims priority, application Great Britain, Apr. 3, 1970, 15,854/70

Int. Cl. F16d 65/56

U.S. Cl. 188—71.9 12 Claims



A slack adjuster for a vehicle braking system including first and second members having a normally reversible screw-thread connections therebetween, the first and second members are supported in first and second pistons respectively of the braking system and excessive displacement of the pistons causes relative displacement between said first and second member to reduce the displacement of the pistons on the succeeding stroke. One of the first and second members may be a split nut and a wedge member can be provided for urging the split nut against the other of the first and second members to prevent relative rotation therebetween under a brake-applying thrust.

3,732,953

ROTATABLE FRICTION PLATE ASSEMBLY AND METHOD OF MAKING THEREOF

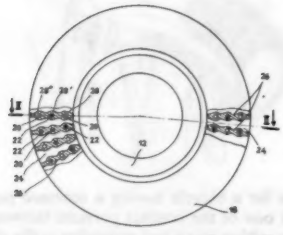
Roger Huet, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Jan. 29, 1971, Ser. No. 110,881

Claims priority, application France, Feb. 16, 1970, 7005500

Int. Cl. F16d 65/12, 65/84

U.S. Cl. 188—218 XL 5 Claims



A rotatable friction plate assembly for a clutch or a brake comprising a cast light alloy base plate sandwiched between two facings of friction material, such as cupro-chromium. A plurality of heat conducting studs project from the backside of either facing in radial arrays to permit casting of the flange portion between the positioned facings whereby the flange portion is shaped to form radial ribs embedding said studs and to define radial vent conduits.

3,732,954

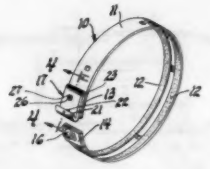
QUICK CHANGE AUTOMATIC TRANSMISSION BAND AND BRACKET ASSEMBLY

Robert H. Heid, 24087 Dartmouth Avenue, Dearborn Heights, Mich.

Filed Sept. 2, 1971, Ser. No. 177,273

Int. Cl. F16d 65/06

U.S. Cl. 188—259 4 Claims



A brake band for an automatic transmission which is provided with a fixed retainer bracket on one end thereof and a detachable retainer bracket on the other end thereof to permit the brake band to be threaded around a brake band assembly in the transmission without removing the brake drum assembly from the transmission.

3,732,955

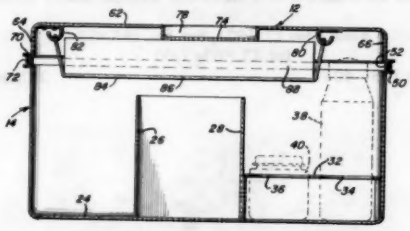
TRAVEL CASE FOR INFANT SUPPLIES

Norman T. Carter, and Margaret A. Carter, both of 65 Country Club Road, Cocoa Beach, Fla.

Filed July 22, 1971, Ser. No. 165,120

Int. Cl. A45c 3/00

U.S. Cl. 190—51 2 Claims



An upwardly opening open-top housing including opposite side and end walls interconnected at their lower marginal edge portions by means of a bottom wall extending therebetween with a top wall being provided and removably positionable over the open upper side of the housing for closing the latter. The inside of the housing includes parallel spaced upstanding partitions dividing the housing interior into three longitudinally spaced compartments and one of the end compartments includes a horizontal partition spaced at least slightly above the bottom wall of the housing and having openings formed therethrough whereby upright containers such as feeding bottles and jars of baby food resting on the bottom wall and projecting upwardly through the horizontal partition may be supported against lateral shifting into engagement with each other. Also, the underside of the top wall of the housing includes means by which an inverted facial tissue box may be removably supported from the top wall for ready dispensing of facial tissues therefrom when the top wall is swung to its open position.

ERRATUM

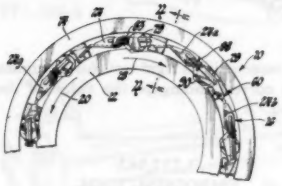
For Class 192—142 see:
Patent No. 3,732,787

3,732,956

OVERRUNNING CLUTCH WITH CENTERING MEANS AND UNIT HANDLED SUBASSEMBLY THEREFOR

Lawrence P. Johnson, Huron, and Oscar G. Kitchin, Port Clinton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1972, Ser. No. 219,078
Int. Cl. F16d *15/00, 41/06*
U.S. Cl. 192—45 5 Claims



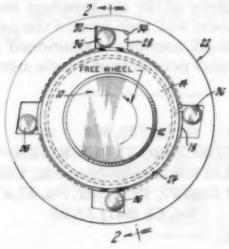
An overrunning clutch is provided with a cage wound from a strip of sheet metal which carries a number of molded bearing blocks within the axial confines of the cage. The bearing blocks center the clutch races with respect to each other and also cooperate in providing a unit handled subassembly of caged rollers for the clutch.

3,732,957

FREE WHEEL DEVICE

John C. McEwen, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 175,569
Int. Cl. F16d *15/00, 41/06*
U.S. Cl. 192—45 4 Claims



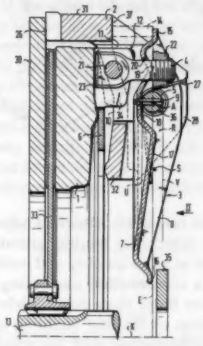
A free wheel unit including a drive unit with an outer surface forming an inner race and having an annular groove in the axial center thereof in which is disposed an expandable split bearing ring, a driven unit or outer race provided with a plurality of circumferentially arranged ramped recesses in each of which is disposed a roller, the rollers being biased radially outward into engagement with the ramped recesses by the expandable split bearing ring, the split bearing ring providing friction contact to rotate the rollers down the ramped recesses into engagement with the inner race to effectively lock the driven unit to the drive unit when the latter is rotated in one direction and to rotate the rollers out of engagement with the inner race when the drive unit is rotated in the opposite direction to place the driven unit in a free wheeling condition relative to the inner drive unit.

3,732,958

CLUTCH ASSEMBLY

Helmut Kraus; Kurt Fadler, and Hans-Walter Riese, all of 872 Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed June 1, 1971, Ser. No. 148,351
Claims priority, application Germany, June 5, 1970, P 20 27 687.3
Int. Cl. F16d *11/06*
U.S. Cl. 192—70.3 8 Claims



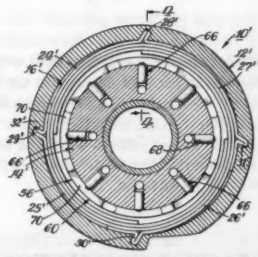
The elements of an automotive friction clutch which are usually installed in a vehicle as a pre-assembled group include a clutch housing, clutch release levers pivoted on the outer or rear face of the radial housing wall, eye bolts pivotally engaged by respective levers, passing through apertures in the radial wall and pivoted to the pressure plate in the housing. The levers are of rearwardly open U-shaped cross section, and their flange portions slidably engage guide faces of the rear wall which bound the afore-mentioned apertures and axially guide bearing blocks on the pressure ring to which the eye bolts are pivoted. The levers are fastened to the radial housing wall by respective pivot pins journaled in ribs of the housing wall and attached to the levers by radial fastening members.

3,732,959

OVERRUNNING BAND CLUTCH ASSEMBLY WITH SELECTIVE ENGAGEMENT MEANS IN THE DRIVE DIRECTION

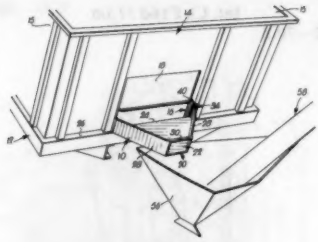
Ernest U. Lang, and Edwin E. Mallory, both of Niles, Mich., assignors to National-Standard Company, Niles, Mich.

Filed Aug. 30, 1971, Ser. No. 176,067
Int. Cl. F16d *25/00*
U.S. Cl. 192—91 A 8 Claims



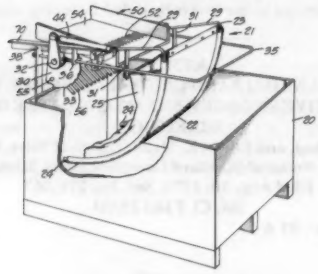
An overrunning clutch comprising drive and driven clutch members, one of which has a V-groove into which the tip ends of a plurality of interfitting and overlapping clutch bands are disposed. Engagement prevention means are used to selectively hold the clutch bands away from engagement with the V-groove as the drive clutch member is turning in the drive direction.

3,732,960
GRAIN SPOUT FOR TILTING BED TRUCKS
Harvey W. Turner, Rt. 1, Thompson, Md.
Filed June 3, 1971, Ser. No. 149,591
Int. Cl. B65g *11/00*
U.S. Cl. 193—5 **6 Claims**



A discharge spout releasably attached adjacent the opening in the tailgate of a vehicle for hauling granular material. The chute is so designed as to be quickly and easily removed when not in use and of a construction permitting interchangeable mounting thereof on more than one vehicle. The chute also serves as an extension of the bed enabling it to be tilted to a greater angle before interfering with the adjacent hopper of an auxiliary granular material conveying mechanism.

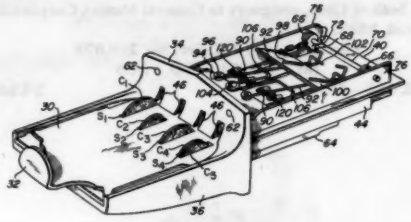
3,732,961
DEVICE FOR COLLECTING FRUIT
Francis J. Thornton, Ontario, and Welton C. Westfall, Riverside, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.
Filed Dec. 31, 1970, Ser. No. 103,270
Int. Cl. B65g *11/08*, *11/12*, *11/18*
U.S. Cl. 193—7 **3 Claims**



A flexible baffle to retard the speed of fruit as they fall into a storage bin or the like to prevent damage to the fruit, the baffle being adjustable upwardly as the fruit collects near its lower extremities. The device includes a gate to block the travel of the fruit in a delivery chute when the adjustable baffle is in its upward-most position to aid in the replacement of a full storage bin with an empty one.

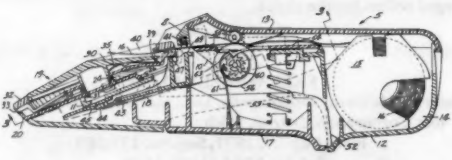
3,732,962
COIN CHUTE CONSTRUCTION
Mitchell A. Hall, Fort Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.
Filed Aug. 10, 1970, Ser. No. 62,384
Int. Cl. G07f *5/14*
U.S. Cl. 194—92 **36 Claims**

The coin chute provides effective fool-proof means whereby a substantial number of coins of various denominations may be inserted and advanced on edge, rather than flatwise with the slider, to initiate or condition for operation the mechanism of a dispenser of goods or services, provided that



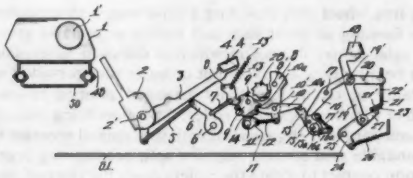
all of the coins inserted pass rigid tests for genuineness and for total valuation corresponding to the value of the goods or serves dispensed.

3,732,963
EMBOSSING TOOL
Hans Kraayenhof, Son, Netherlands, and Curt A. Poulton, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 4, 1971, Ser. No. 140,034
Int. Cl. B41j *1/24*
U.S. Cl. 197—6.7 **6 Claims**



An embossing tool which has an elongated body along which is formed a tape path leading from a supply-receiving cavity at one end to the embossing die members at the opposite end. This embossing tool utilizes a tape path which leads to the periphery of the die members and between two apposed die members and then toward the center of the die members. The cut-off member is positioned along the path and adjacent the outer periphery of the die members.

3,732,964
ELECTRIC TYPEWRITER
Takayasu Inoue, 838 Rokkakubashi-machi, Yokohama, Japan
Filed Aug. 27, 1970, Ser. No. 67,474
Int. Cl. B41j *23/08*
U.S. Cl. 197—17 **3 Claims**



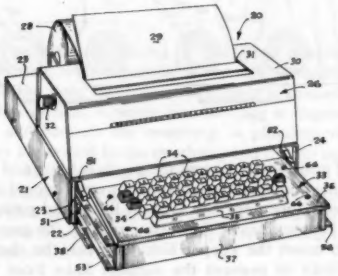
An electric typewriter so constructed that when a key is slightly touched a printing mechanism is electrically actuated to turn upward a corresponding type bar with a character so as to make impressions as desired on the paper wound on a

platen and comprising a carriage having said platen, a spacing mechanism for feeding said carriage, a carriage return mechanism for feeding back said carriage and electric power supplier for operating said mechanisms. Said typewriter being designed so compacted as easier to handle.

3,732,965
TELEGRAPH TRANSCEIVER WITH RETRACTABLE KEYBOARD

Peter G. S. Mero, Winnetka, Ill., assignor to Extel Corporation, Chicago, Ill.

Filed Mar. 8, 1971, Ser. No. 121,843
Int. Cl. A41j *29/02*
U.S. Cl. 197—186 A **2 Claims**

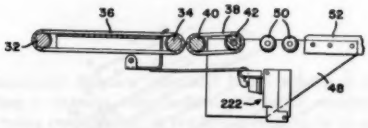


A compact, high-speed portable telegraph transceiver having an electrical keyboard movable between an extended operating position projecting outwardly of the front of the base of the telegraph transceiver and tilted at an angle relative to the base, and a retracted storage position in which the keyboard is completely enclosed within the transceiver base and protected against unauthorized use or possible damage.

3,732,966
PACKAGING APPARATUS

Fritz F. Treiber, Centerville, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Oct. 19, 1970, Ser. No. 81,716
Int. Cl. B65g *47/00, 37/00*
U.S. Cl. 198—21 **11 Claims**

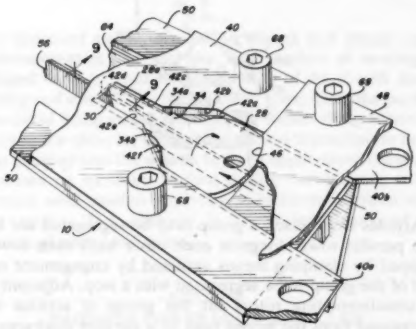


Packaging apparatus for conveying freshly wrapped packages to a weighing scale, computing the price of the weighed package, printing a label with the computed price and applying the printed label to the weighed package. The main carriage for moving the packages through the apparatus is actuated by a cam and linkage mechanism which imparts a translational movement to the carriage so that indexing through the machine is accomplished by a series of lifting, carrying and depositing movements. The conveyor which loads the packages into the apparatus has a series of package actuated limit switches associated therewith which act in conjunction with a limit switch associated with the drive shaft of the indexing carriage so that the loading conveyor is actuated only when a package is present on the conveyor and the carriage is in position to receive the package from the conveyor. Another limit switch controlled by the drive shaft delays the transfer of information from the computer associated with the system to the printing mechanism until the package to be labelled is in the proper position for labelling. A main cam mounted on the drive shaft not only provides vertical and horizontal indexing movement to the carriage but also lifts and lowers the labelling head, operates a bellows for alternately applying suction and an air blast to a label carried by the labelling head and operates a pressure roller positioned downstream of the labelling head to apply pressure to the freshly applied label. Normally, all of the three main sections of the apparatus are enclosed in a guard tunnel, including the weighing section, and in this regard the guard tunnel for the weighing section is attached directly to the scale platform so that if an article too large to be conveyed through the tunnel is to be weighed and labelled it may be placed on top of the tunnel and the labelling accomplished semi-automatically. In order to provide positive control of a printed label as it is conveyed from the printer to the labelling head a series of endless belts are provided which not only positively engage the labels and convey them to the labelling head but impart a series of corrugations in a label to stiffen it and facilitate its insertion into the labelling head.

3,732,967
ORIENTATION APPARATUS

Theodore R. Francis, 855 Richard Street, Aurora, Ill.

Filed Dec. 3, 1971, Ser. No. 204,537
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AC **7 Claims**



Apparatus for orienting generally non-cylindrical and non-spherical asymmetrical items, such as keys. The item enters an inlet slot which feeds it to an orientation station having (1) a central support, and (2) means for preventing the item from pivoting until a selected portion of the item engages a beveled portion of the orientation station. When such engagement occurs, the item is cammed to pivot about the central support in a predetermined direction to achieve selected orientation.

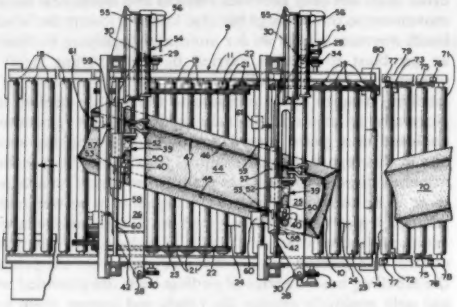
3,732,968
APPARATUS FOR ORIENTING MATERIAL

James R. Fedor, and Christopher E. Christie, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 11, 1971, Ser. No. 170,685
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AB **17 Claims**

A machine for properly aligning unoriented pieces of defective tread stock for movement through a tread slitter where

the different tread and sidewall rubber compounds are separated and returned to the extruder for reuse. The machine



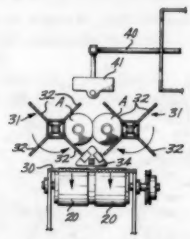
includes a pair of pointed awls which act as pivots around which the piece of tread stock is rotated into properly aligned relation for passage through the tread slitter.

3,732,969

ARTICLE GROUP-SEGREGATING MECHANISM

Alvin C. Formo, Seattle, Wash., assignor to Formost Packaging Machines, Inc., Seattle, Wash.

Filed Dec. 14, 1970, Ser. No. 97,784
Int. Cl. B65b *35/30;* **B65g** *47/26*
U.S. Cl. 198—34 **5 Claims**



Articles from which a group is to be segregated are fed in two parallel rows alongside each other until such rows are stopped by clamping means actuated by engagement of the end of the group to be segregated with a stop. Adjacent arms of counterrotating rotors lift the group of articles to be segregated from the infeed path to a parallel discharge path along which a pusher moves to push the segregated article group to a bagging station for bagging. Upon transfer of the segregated article group from the feed path to the discharge path the clamping means are released so that feed of articles from the feed section to the segregating section is resumed.

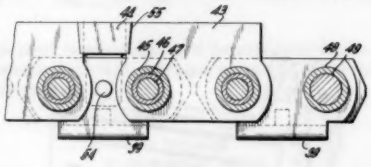
3,732,970

LIFT LOADER

Taro Nakanishi, Nishinomiya, and Nobumitsu Kameo, Miharashi, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1972, Ser. No. 229,636
Int. Cl. B65g *17/42*
U.S. Cl. 198—154 **6 Claims**

A lift loader includes a substantially rectangular platform or carrier having each of its four corners connected, by a ball joint, to a respective endless chain, with the chains being trained around sprockets rotatably mounted on a supporting frame including an upper section adjustable vertically relatively to a lower section. The chains are in two sets, each including a pair of laterally spaced endless chains, and each set of chains is trained around a respective set of pairs of laterally spaced sprockets. A motor drives all four endless chains in synchronism with each other along an endless path including a carrier lifting and lowering run, a carrier return run and a pair of vertically spaced horizontal runs. A goods loading station is provided at one end of one horizontal run and a goods discharge station is provided at the opposite end of the other horizontal run. Each carrier is longitudinally flexible and includes a pair of laterally spaced link chains comprising support links articulatedly interconnected by intermediate links, transversely extending juxtaposed support plates each secured on a respective pair of support links, and keeper links insertable between adjacent support links to prevent relative pivoting of the support plates, the keeper links being spring biased to



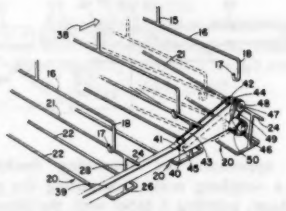
retracted positions. Adjacent the goods loading and discharge stations, the then flexible carrier is convexly curved about support rollers, "opening" the support links, and guide rails engage the keeper links as the carrier reaches the goods loading station to insert the keeper links between the then "open" support links to prevent the support links from "closing" whereby to maintain the carrier with a horizontally planar orientation during its travel along the lifting and lowering run. As the carrier passes the goods discharge station, the support links again "open" providing for retraction of the spring biased keeper links so that the carrier is again flexible during its passage along the return run. Chain take-up means are provided to compensate the endless chains for any adjustment in the relative height of the supporting frame.

3,732,971

CONVEYING SYSTEM FOR USE IN SMOKE HOUSES AND THE LIKE

Knud Simonsen, 25 West Dean Valley Road, Islington, Ontario, Canada

Continuation-in-part of Ser. No. 753,547, Aug. 19, 1968. This application May 17, 1971, Ser. No. 143,780
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 R **11 Claims**



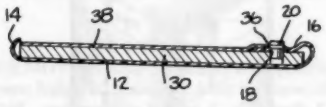
An apparatus for use in the processing of sausage products, such as wieners, comprises an overhead conveyor rail having a series of interconnected trolley units travelling thereon. Elongated sausage-supporting structures are releasably suspended on hangers carried by the trolley units for passage through sausage treatment stations with the sausage-supporting structures disposed generally horizontally with a continuous length of linked sausage product festooned thereover. A discharge actuating mechanism at an unloading station is operative to unlatch one end of the supporting structure from its hanger to allow that structure to pivot downwardly in turn to allow the sausage products to slide off.

3,732,972

WET PALETTE

Alfred Israel, New York, N.Y., assignor to Archie F. Burger, New York, N.Y., a part interest

Filed June 26, 1971, Ser. No. 266,064
Int. Cl. B44d 3/02
U.S. Cl. 206—1.7 9 Claims



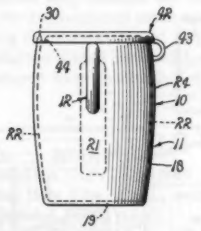
A wet pallette comprising a flat base integral with a peripheral wall, with a portion of the wall extending over a portion of the base to form an overhang in spaced, parallel relationship thereto. A water retentive pad is disposed across the base and beneath the overhang. A plurality of pigment containers are seated in the overhang and fit into openings in the pad. A water-permeable sheet overlies the pad and overhang, surrounding the pigment containers, and providing an area on which selected pigments may be placed and mixed. A flexible sleeve is used to encase the palette when not in use, to prevent dehydration.

3,732,973

COMBINED DENTURE CASE AND BRUSH

Lois H. Crawford, 2949 North Jackson, Fresno, Calif.

Filed Nov. 22, 1971, Ser. No. 200,894
Int. Cl. A45d 44/18, 44/20; A46b 5/02
U.S. Cl. 206—15.1 E 4 Claims



A combined denture case and brush having a container providing a denture receptacle and a brush receptacle, the brush being positionable in the brush receptacle to provide a handle for the combined case and brush.

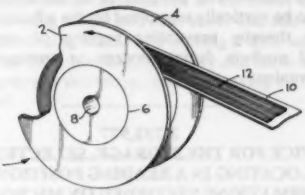
3,732,974

FIBER PACKAGE COMPRISING OVERLYING WRAPS OF A FIBROUS TAPE

Michael J. Ram, West Orange, and Thomas K. Reynolds, Piscataway, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,077
Int. Cl. B65d 85/67; B32b 5/24
U.S. Cl. 206—59 A 13 Claims

An improved fiber package is provided wherein a dry fibrous tape is wound upon a rigid support and each overlying wrap is separated from the previous wrap by an interlay. The interlay employed in the formation of the improved fiber package possesses a stiff inner core and resilient tape contact surfaces. The fibrous tape is preferably composed of a carbonaceous fibrous material (e.g. a graphitic carbon fibrous material). The fiber package possesses enhanced stability, and



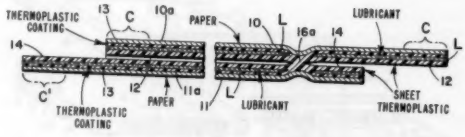
is resistant to telescoping. The fibrous tape may be conveniently stored within and unreeled from the package in the absence of fiber damage.

3,732,975

STERILE PACKAGE FOR CLINICAL THERMOMETERS AND THE LIKE AND METHOD OF MAKING IT

George W. Poncy, 59 Dale Drive, Chatham, N.J.

Continuation-in-part of Ser. No. 736,218, June 11, 1968, Pat. No. 3,552,558. This application Oct. 5, 1970, Ser. No. 77,917
Int. Cl. A61b 19/02
U.S. Cl. 206—63.2 14 Claims



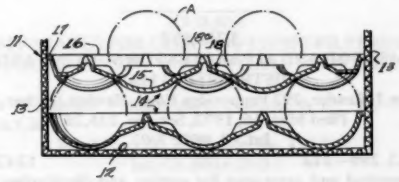
An improved sterile, disposable, sheath and sheath cover for thermometers and the like, and method of making it, packaged so as to preserve the sterility of the sheath during handling and storage, the sheath cover comprising the packaging material being strippable from the sheath along a tear seal to expose the same for clinical use when a thermometer or the like is inserted into the sheath. In some applications the sheath is covered on its outer surface during manufacture with a lubricant, medicated or otherwise, to facilitate insertion into a body cavity. The package is particularly designed for economical mass production.

3,732,976

PACKAGE FOR FRAGILE ARTICLES

Clifford H. Bessett, South Holland, and Theodore H. Misdom, Lansing, both of Ill., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Apr. 12, 1971, Ser. No. 133,074
Int. Cl. B65d 71/00
U.S. Cl. 206—65 R 7 Claims



A package for fragile articles is provided which includes a container having a bottom surface delimited by upright walls, and a plurality of article-loaded trays arranged in a compact, stacked, superposed relation and disposed within the con-

tainer. Each tray has a plurality of article accommodating pockets separated by struts. The struts of a tray are in vertical alignment with the pockets of the trays disposed immediately above and below. The peripheries of the stacked trays are adapted to be vertically supported by the adjacent walls of the container thereby preventing sagging of certain of the peripheral pockets during storage or transporting of the loaded container.

3,732,977

DEVICE FOR THE STORAGE, SELECTION AND LOCATING IN A READING POSITION OF INFORMATIONS RECORDED ON MICRO-CARDS

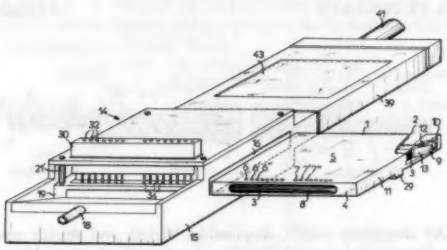
Jean-Claude Deprez, Ermont, and Charles Jacques Munier de Montrichard, Sartrouville, both of France, assignors to Societe Industrielle Des Nouvelles Techniques Radioelectriques et de L'Electronique Francaise, Asnieres, France

Filed July 27, 1971, Ser. No. 166,410

Claims priority, application France, Aug. 4, 1970, 7028725; Germany, Dec. 23, 1970, P 20 63 552.3; Dec. 23, 1970, G 70 47 541.1; Netherlands, Dec. 10, 1970, 7017998

Int. Cl. B07c

U.S. Cl. 209—110.5 **9 Claims**



In a device for the storage, selection and locating in a reading position of recorded information on micro-cards it is known to reduce the format of the cards by photographic means. It is also known to mount the standard card on a rigid frame or bar to permit the selective calling up and automatic positioning of the cards in reading means. In the present invention the device comprises cassettes in each of which are stacked micro-cards, each card being provided at one of their edges with coding perforations in the form of open slots or holes forming as many combinations as there are cards in the cassette, the cassette having a row of holes opposite the holes and slots in the micro-cards for the passage of retaining means permitting the locking of the pile of micro-cards and the selective unlocking of each one of them by disengagement of the retaining means passing through the holes of the corresponding card. The cassettes are conveniently constituted by flat rectangular boxes open at a narrow side and having an opposite elongated opening for the introduction of compressed air to expel the selected card from the cassette opening.

3,732,978

METHOD AND APPARATUS FOR SORTING AND DISTRIBUTING MAIL

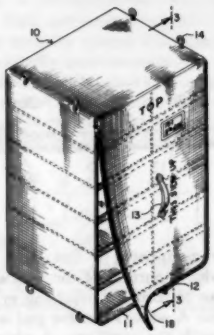
Arthur J. Reader, 293 Pepperidge Road, Hewlett Harbor, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,267

Int. Cl. B07c *7/02*

U.S. Cl. 209—122 **12 Claims**

A method and apparatus for sorting and distributing mail consisting of a multi-compartment mail bag which is collapsable while being transported or returned from a multi-tenant building. The bag is initally retained in a central postal sorting station where mail for each of the tenants is inserted into each of the individual compartments. The multi-compartment bag is then collapsed and transported to its destination indicated on the outside of the bag. When it is delivered to a multi-tenant building, it is erected and supported within a gang mail box. The gang mail box preferably includes individual mail compartments having inwardly projecting flanges designed to



project into each of the compartments. This physically isolates each compartment from the other in order to prevent compartment-to-compartment pilferage. A slide fastener is also provided on the front cover of the multi-compartment bag so that the bag can be locked while it is transported to the addressee's building.

3,732,979

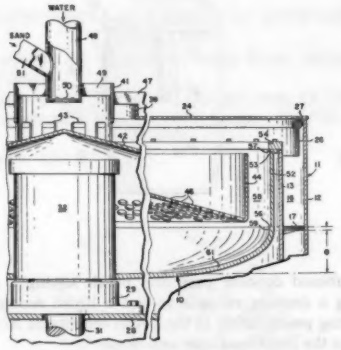
MERCURY SCREEN CENTRIFUGAL SEPARATOR

Walter W. Gilkey, P.O. Box 505, Mount Vernon, Wash.

Continuation-in-part of Ser. No. 611,683, Jan. 25, 1967, abandoned. This application Mar. 7, 1969, Ser. No. 805,317

Int. Cl. B04b *3/00*

U.S. Cl. 209—199 **3 Claims**



A centrifugal separator for and a method of recovering highly divided value particles, principally gold and platinum, having a greater specific gravity than mercury. A relatively shallow and large-diameter bowl is provided with a mercury retention channel formed in and extending substantially the entire vertical height of the vertical side wall of the bowl and positioned at a predetermined distance from the point of joinder between the side and bottom walls of the bowl. The retention channel is formed in one embodiment with upper and lower horizontal faces and a vertical bottom face, and in a second embodiment with a sloping bottom face giving the channel greater depth at the bottom. The separator bowl is rotated at a speed sufficient to stabilize the mercury screen within the retention channel forming a smooth substantially vertical face over which the value-containing material is caused to pass in a substantially vertical path. The mercury

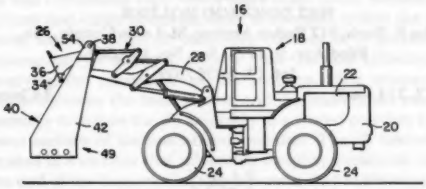
wall or film within the channel acts as a screen through which particles of greater specific gravity than mercury are caused to pass by centrifugal force to cover the bottom face of the retention channel thereby displacing the mercury. The value particles thus collected are primarily finely-divided oxide and sulfide-coated gold particles and particles of platinum. The mercury screen does not flow but is stabilized or immobilized and is only removed by erosion as the bottom face of the channel builds up with the separated value particles. The mercury eroded from the channel face is washed off and recovered.

3,732,980

EARTH MOVING AND SCREENING EQUIPMENT

John J. Evers; Ralph E. Jones, and Alvie E. Boyce, all of Tahoe City, Calif., assignors to Robert C. Gibhardt Co., Tahoe City, Calif.

Filed July 9, 1970, Ser. No. 53,603
Int. Cl. B07b *1/28*
U.S. Cl. 209—421 **12 Claims**



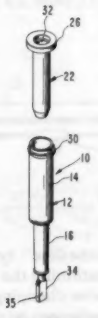
A screen for use on buckets of earth moving equipment such as tractors, loaders and the like which is mounted to a generally U-shaped frame that is pivotable independently of the bucket about a horizontal axis between an operative position in which the screen is disposed beneath the bucket into an inoperative position in which the screen is disposed above the bucket. Power means move the screen between its operative positions and the frame fully stradles the bucket so that the bucket can be used for conventional earth moving and loading operations by placing the screen into its inoperative position. To screen the material the screen is placed beneath the bucket so that material dumped from the bucket must fall onto the screen.

3,732,981

FILTRATION COLUMN

Monroe Mendelsohn, Daly City, Calif., assignor to Bio-Rad Laboratories, Richmond, Calif.

Filed Sept. 1, 1970, Ser. No. 68,710
Int. Cl. B01d *23/20*
U.S. Cl. 210—94 **2 Claims**



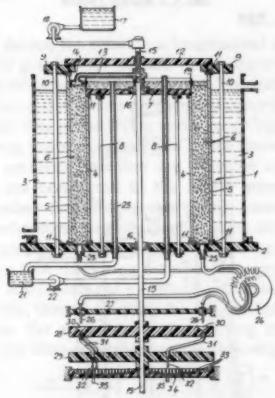
A column for use in filtering a fluid wherein a tubular body adapted to contain a filter such as a resin material, has an upper open end for receiving the fluid to be filtered and a fluid passage extending to its lower end. Means is integral with the body for normally closing the lower end thereof. A line of weakness is disposed at the junction of the lower end of the body and the closing means and such lower end can be opened by grasping the closing means and moving it back and forth to cause fatigue of the material of the body and allow separation of the closing means therefrom, thereby leaving an opening at said lower end.

3,732,982

APPARATUS FOR USE IN CONTINUOUS LIQUID CHROMATOGRAPHY

Peter Dunnill, London, and Malcolm Douglas Lilly, Orpington, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 31, 1971, Ser. No. 129,666
Claims priority, application Great Britain, Apr. 3, 1970, 16,006/70
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **2 Claims**



A liquid mixture to be separated and an eluting agent are continuously fed to the top of a vertically extending chromatographic column, the former being supplied at a restricted region which is rotated round the column and the latter being supplied uniformly through a buffer reservoir which communicates with the column via a porous barrier. The liquid is pumped through the column and discharges from the base through a series of uniformly distributed output channels, which are scanned by a multi-channel distributor comprising a series of ducts rotated in synchronism with the mixture supply.

3,732,983

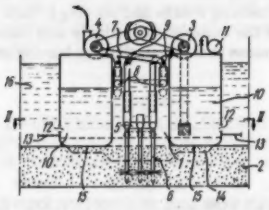
APPARATUS FOR CLEANING LOOSE FILTERING MATERIAL IN SLOW WATER FILLED WATER SUPPLY FILTERS

Boris Fedotovich Volokh, ulitsa Pastera, 4, kv. 44, Odessa, U.S.S.R.

Filed Mar. 29, 1971, Ser. No. 128,857
Int. Cl. B01d *23/24*
U.S. Cl. 210—273 **2 Claims**

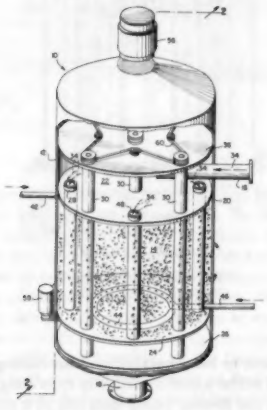
An apparatus for cleaning loose filtering material in slow water-filled water supply filters, comprising a washing chamber equipped with means for its movement relative to the surface of the loose filtering material being cleaned. Mounted inside the washing chamber are washing tubes to feed clean

water into the layer of filtering material to be washed. The washing chamber communicates with a suction pipe which



evacuates dirty water therefrom. The chamber is provided with means for regulating its pressure upon the filtering material by controlling its degree of buoyancy.

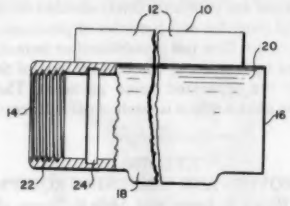
3,732,984
APPARATUS FOR PRODUCING A CONTINUOUS COUNTER-CURRENT EFFECT
Charles G. Phillippi, 3414 Bonneville Drive, Charlotte, N.C.
Filed Apr. 24, 1970, Ser. No. 31,481
Int. Cl. B01d *29/08*
U.S. Cl. 210—289 **6 Claims**



Solid-liquid contacting device having means for continuously changing the position of inlet and outlet ports in the solids bed for simulating a continuous counter-current flow of solids and liquid. Method of simulating a continuous counter-current flow of solids and liquid.

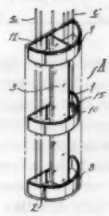
3,732,985
SCREEN RETAINER ASSEMBLY
Donald K. Murrell, La Mirada, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed May 24, 1971, Ser. No. 146,375
Int. Cl. B01d *35/02*
U.S. Cl. 210—446 **1 Claim**

A method for installing a screen in a conduit includes the steps of draping the screen across a convoluted band of ductile material, positioning the screen-draped band within the conduit in general alignment with a continuous groove provided in the interior surface of the conduit, and expanding the convoluted band so that the band fits snugly in the groove to thereby hold the screen firmly in place with its periphery pinched between the band and the groove. The resultant screen retainer assembly has the advantages that the screen



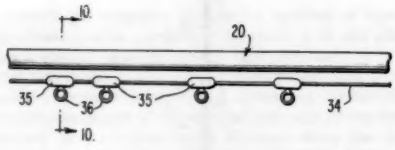
retaining means does not impede the flow of fluid through the conduit and that the expanded band cannot become displaced or accidentally removed.

3,732,986
WELDING ROD HOLDER
Charles E. Bush, 917 Baden Avenue, St. Louis County, Mo.
Filed Apr. 9, 1971, Ser. No. 132,661
Int. Cl. A47f *7/00*
U.S. Cl. 211—60 **4 Claims**



A holder for diverse types of welding rods incorporating at least two rod-receiving compartments which are of different effective longitudinal extent so that rods of different lengths may be accommodated, as well as to permit of a projection of one series of rods beyond another to facilitate manual detection.

3,732,987
SUPPORT FOR CLOTHES AND THE LIKE
John Q. Adams, IV, 1206 Foxcroft Road, Richmond, Va.
Filed Sept. 22, 1971, Ser. No. 182,635
Int. Cl. D06f *3/14*
U.S. Cl. 211—119.13 **4 Claims**



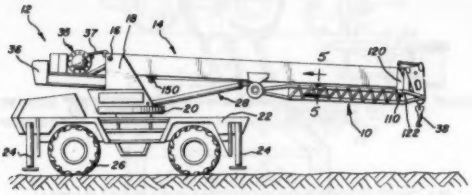
A support of the "clothesline" type comprises a resilient split tube or channel constituting the body portion of the support and adapted to receive clampingly with the flexible article to be supported a continuous or interrupted clamping bar or lug. Such bar or lug may be integrally hinged to the body portion or may be slidable therealong or may be carried by an independent line extending parallel to the body portion.

3,732,988

JIB ASSEMBLY FOR TELESCOPING CRANE BOOM

Gerald P. Lamer, Rothschild, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 12, 1970, Ser. No. 79,767
Int. Cl. B66c 23/62
U.S. Cl. 212—144 3 Claims



An extensible jib assembly for a crane boom of the extensible and retractable type which has a main boom member and at least one outer boom member telescoped within the main boom member. The jib assembly consists of a plurality of rectangular jib sections with a base section telescopingly receiving the remainder of the sections. First cooperating means between the base section and the main boom member normally maintain the jib assembly in a stored position on the lower surface of the main boom member. The jib assembly is located in a manner that releasable coupling means carried by one end of the base section may be connected to the outer end of the outer boom section when the boom is fully retracted so as to pivotally connect the jib assembly to the boom while the jib assembly is in the stored position.

The jib assembly is moved to an operative position by connecting one end of a cable forming part of a hand winch to the opposite end of the jib assembly and releasing the cooperating means so that unwinding of the winch will allow the jib assembly to pivot about the crane boom.

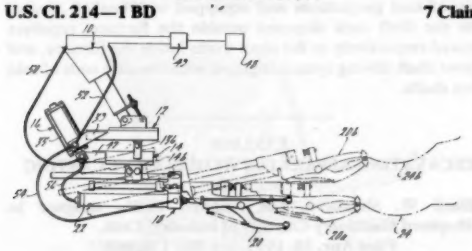
The jib assembly is held in any of a plurality of angularly related operative positions on the boom through cable means having one end connected to the jib assembly and a second end connected to a mast structure extending above the free end of the outer boom member. The jib assembly may be used in a fully retracted, a partially extended and a fully extended position of the free end of the boom and may be held in a plurality of angularly related positions on the boom in each extended position.

3,732,989

LIFT CONTROL SYSTEM FOR PRESS UNLOADER OR THE LIKE

Harlan R. Cagle, Clarkston, Mich., assignor to Sahlin Engineering Company, Inc., Troy, Mich.

Filed May 27, 1971, Ser. No. 147,367
Int. Cl. B66c 23/00
U.S. Cl. 214—1 BD 7 Claims



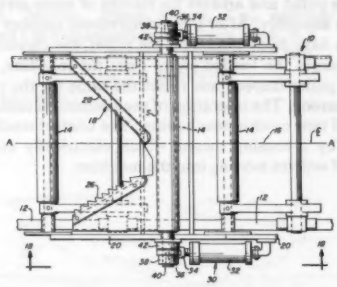
There is herein disclosed a lift control system for a press unloader having an extendable and retractable jaw means for gripping and removing a part from the die cavity of a press with pivotal frame means supporting the jaw means for pivotal movement to lift the part from the die cavity and interconnected air operated power cylinder means to sequentially extend the jaw means, grip the part, lift the part, and retract the jaw means.

3,732,990

TURNOVER DEVICE

Walter Suter, Willoughby Hills, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 13, 1971, Ser. No. 142,865
Int. Cl. B65q 7/08
U.S. Cl. 214—1 QG 12 Claims



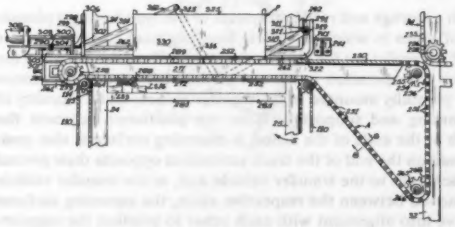
A turnover device for rotating a longitudinal member having a center of gravity and carried by a supporting member having a supporting surface is disclosed. The turnover device has a frame disposed adjacent the supporting member, a tilting member on one side of the frame and a receiving member adjacent the tilting member on the side of the frame. The tilting member and receiving member are movable on the frame. Drive means are connected to the tilting member and the receiving member for moving the tilting member and the receiving member from a normal rest position coincident with or below the supporting surface to a longitudinal member tilting position so that the tilting member engages the longitudinal member and rotates the longitudinal member beyond the center of gravity, thereby causing the longitudinal member to fall back onto the support member during the retracting movement of the tilting member and the receiving member.

3,732,991

STACKING MACHINE

George E. Von Gal, Jr.; Lawrence H. Hutchinson, and Oneal W. Davis, all of Montgomery, Ala., assignors to Litton Industries, Inc., Beverly Hills, Calif.

Division of Ser. No. 775,965, Nov. 14, 1968, Pat. No. 3,521,736, which is a continuation of Ser. No. 557,285, June 13, 1966, abandoned. This application Apr. 24, 1970, Ser. No. 43,294
Int. Cl. B65g 57/24
U.S. Cl. 214—6 P 3 Claims



A stacking maching including an infeed conveyor, a cross-feed conveyor angularly disposed with respect to the infeed

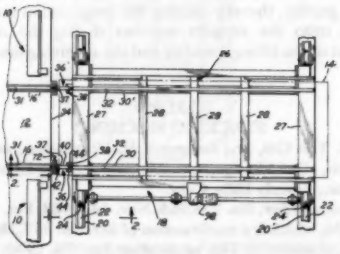
conveyor, and a turning section at the junction of the infeed conveyor and the corss-feed conveyor for selectively turning articles passing from the infeed conveyor to the cross-feed conveyor for sidewise or endwise movement along the cross-feed conveyor. A rake mechanism removes the articles from the cross-feed conveyor onto a selectively extendible apron assembly adjacent the cross-feed conveyor, which selectively moves the articles into an elevator shaft. A compression and release assembly engages and retains the articles on the apron assembly within the elevator shaft while the apron assembly is retracted from under the articles thus held. The compression and release assembly then releases the article in the elevator shaft and allows them to drop onto a pallet held within the elevator shaft by a vertically movable elevator. The elevator lowers the pallet and articles for receipt of more articles from the apron assembly. After a pre-determined number of layers of articles have been placed on the pallet, the elevator lowers and discharges the loaded pallet from the machine, receives an empty pallet thereon and riases the same for the receipt of articles thereon. The operation of the machine is controlled by a punched tape control mechanism. The control mechanism is actuated by a sensing means which electrically counts the number of articles moving into the machine.

3,732,992

SELF ADJUSTING TRACK EXTENSION

Donald H. Busam, Hometown, Ill., assignor to Interlake Inc., Chicago, Ill.

Filed Dec. 30, 1971, Ser. No. 213,981
Int. Cl. B65g *35/00, 1/06*
U.S. Cl. 214—16.4 B **13 Claims**



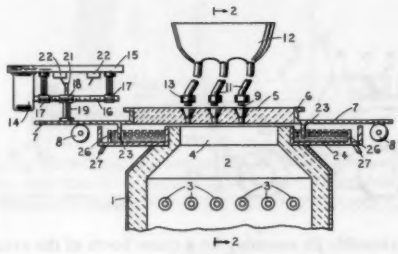
In a storage and retrieval system of the type having a plurality of aisles in which an article handling load carrier operates and a transfer car for transferring the load carrier between the aisles for operation in several of the aisles, track extensions are pivotally mounted to the transfer vehicle and a plurality of camming and support surfaces are positioned adjacent the rails at the ends of the aisles. A camming surface is also positioned on the end of the track extensions opposite their pivotal attachment to the transfer vehicle and, as the transfer vehicle is moved between the respective aisles, the camming surfaces move into alignment with each other to position the supporting surfaces of the adjustable track extensions in continuous and substantially coplanar relationship with the rails on the transfer vehicle and in the individual aisles.

3,732,993

SEAL FOR TOWER FURNACE

Michael Csapo, Wyncote, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Aug. 17, 1971, Ser. No. 172,490
Int. Cl. F27b *1/00, 9/00*
U.S. Cl. 214—18 V **3 Claims**



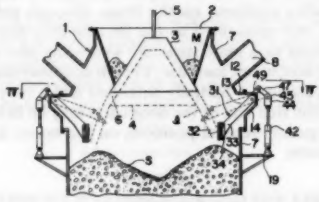
Apparatus forming a seal between the upper end of a tower furnace and a reciprocating feed mechanism that is used to supply feed material to be treated.

3,732,994

APPARATUS FOR CHANGING THE CHARGE DISTRIBUTION IN A VERTICAL FURNACE

Kengo Yoshioka; Naoto Kishikawa, and Hiroyuki Takao, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 9, 1971, Ser. No. 132,737
Claims priority, application Japan, April 9, 1970, 45/33654
Int. Cl. F27b *11/12*
U.S. Cl. 214—36 **9 Claims**



An apparatus for changing the distribution of the charge in a vertical furnace which comprises a multiplicity of projections extending outwardly from the shell of the furnace at the top portion thereof, a pivot shaft rotatably extending through each of said projections and equipped with sealing means, with the shaft ends disposed outside the furnace, repellers secured respectively to the pivot shafts inside the furnace, and a pivot shaft driving system engaged with one-side ends of said pivot shafts.

3,732,995

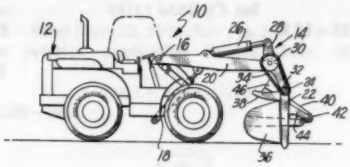
EXCAVATING APPARATUS WITH BUCKET CASTING MEANS

Willard W. Shepherd, Los Angeles, Calif., assignor to Shepherd Machinery Co., City of Industry, Calif.

Filed Apr. 30, 1971, Ser. No. 138,980
Int. Cl. E02f *3/70*
U.S. Cl. 214—92 **5 Claims**

An apparatus for excavating areas remote therefrom, comprising a vehicle having a boom carrying a dragline bucket which may be cast horizontally to the desired area by pivoting all or a part of the boom. The bucket is attached to a cable

which is reeled in to drag the bucket across the area to be excavated, thereby loading it. Further reeling in of the cable



returns the bucket to its original position on the boom, whereupon the bucket may be tilted to dump it.

3,732,996

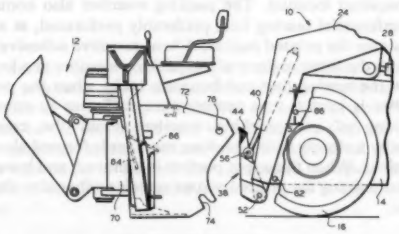
APPARATUS AND METHOD FOR MOUNTING AN ATTACHMENT ON A VEHICLE

James J. Bauer, Lisson, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 5,541, Jan. 26, 1970, abandoned. This application Aug. 30, 1971, Ser. No. 176,268

Int. Cl. B65g 69/00

U.S. Cl. 214—152 **4 Claims**



A vehicle having a body to which a pair of elevatable boom arms are connected. Connected to the boom arms is an attachment carrier. The carrier can engage an attachment so that the attachment can be carried by the boom arms and positioned to bring apparatus on the attachment into cooperation with apparatus on the body of the vehicle for mounting the attachment on the body of the vehicle.

3,732,997

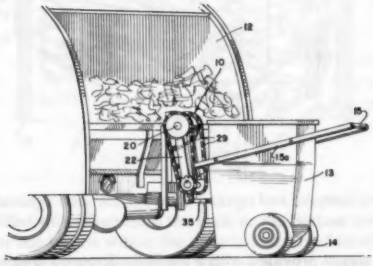
CONTAINER LIFT AND DUMP APPARATUS

Robert P. Reavis; Robert P. Reavis, Jr., both of Box 5229, and Robert P. Reavis, III, Monticello Dr., all of Statesville, N.C.

Filed Feb. 28, 1972, Ser. No. 229,685

Int. Cl. B65f 3/02

U.S. Cl. 214—302 **12 Claims**



Apparatus is provided for lifting a container and dumping its contents into a receptacle such as a truck body. The apparatus has a horizontal fulcrum mounted on the outside of the receptacle and an elongated frame is swingable about the fulcrum between a lowered and a raised position. Endless chains on the frame have drive sprockets coaxial with the fulcrum and hooks on the chains engage the container to first lift the same while the frame remains in its lowered position. In the lifted position of the container the hooks cooperate with abutments on the frame so that continued movement of the chains swings the frame with the container to a raised position in which contents of the container are dumped into the receptacle.

3,732,998

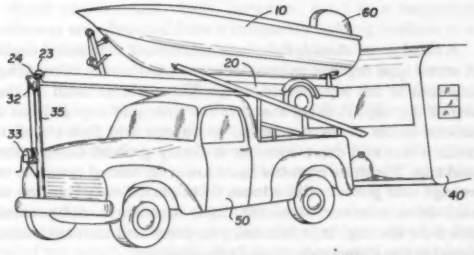
BOAT RACK

Marion A. Martin, Baton Rouge, La., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,548

Int. Cl. B60r 9/00

U.S. Cl. 214—450 **3 Claims**



An improved boat rack capable of carrying a boat which is mounted on a trailer, with provisions for mounting the boat rack on the top of a pick-up truck.

3,732,999

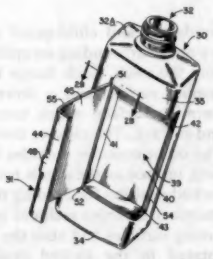
BOTTLE WITH EXTERNAL COMPARTMENT

Rodney G. Rounkles, Excelsior Springs, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed May 3, 1971, Ser. No. 139,650

Int. Cl. B65d 1/04

U.S. Cl. 215—6 **2 Claims**



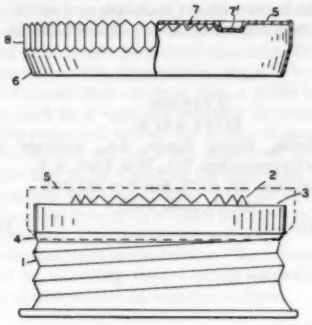
A bottle having an integrally formed, recessed, exterior storage compartment provided in its sidewall. A hinged cover is provided for the storage compartment.

3,733,000

CHILD PROOF CLOSURE FOR CONTAINERS

Vincent Scuderi, East Williston, N.Y., assignor to Van Blarcom Closures, Inc., Brooklyn, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,455
Int. Cl. B65d 55/02
U.S. Cl. 215—9 2 Claims



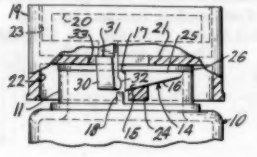
A child proof closure for containers having a threaded neck. A screw type cap has an annular groove in the side of said cap adjacent to the top thereof, and a first circle of teeth on the top of the cap. A drive member fits over said cap and has a second circle of teeth adapted to engage said first circle of teeth when said drive member is firmly pressed down upon said cap. The drive member has a lower lip turned inwardly to engage said groove with a loose fit to permit easy rotation of said drive member when the drive member is not pressed down on the cap. It is necessary to press and turn said drive member simultaneously to unscrew said cap.

3,733,001

CHILD-PROOF CONTAINER AND CLOSURE UNIT

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Apr. 5, 1972, Ser. No. 241,347
Int. Cl. B65d 55/02
U.S. Cl. 215—9 8 Claims



An improved container and child-proof closure therefor. The container has a neck surrounding an opening. At least two flanges project from the neck. Each flange has a spirally expanding first camming surface and a downwardly directed helical second camming surface which terminates at an inwardly directed end surface. The closure comprises outer and inner members. The outer member includes lugs for engaging the second camming surface as the cap is rotated on the container neck to a locked position for holding the closure on the neck. The inner member includes resilient means which ride over the first camming surfaces and abut the flange end when the closure is rotated to the locked position to prevent removal of the closure. Movement of the inner closure member against spring means within the outer closure member permits the closure to be rotated from the locked position for removal from the container. In one embodiment, means is provided for further tightening the closure on the container after it is in the locked position.

3,733,002

SEALED CONTAINER

Masaaki Fujio, 3-15-8 Aoyamadoi, Suita, Japan

Filed Oct. 12, 1970, Ser. No. 80,086
Int. Cl. B65d 11/16
U.S. Cl. 215—12 R 5 Claims

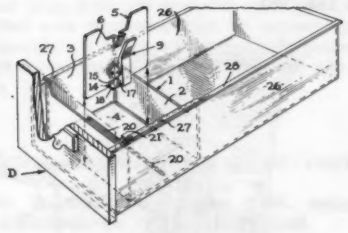
Sealed containers comprising in combination a cylindrical packing member and a container having a closing means. The cylindrical packing member is made from a heat-shrinkable synthetic resin and has printed matter appearing thereon at the required location. The packing member also contains a circumferential tearing line, preferably perforated, at a location above the printed matter. A heat-sensitive adhesive is applied on the inner surface of the packing member at a location below the tearing line and becomes tacky when the packing member is heated to a temperature sufficient to cause the shrinking of said packing member about the container whereby a closely fitting packing member is formed about the container. When the upper portion is removed, and lower portion containing the printed matter remains adhered to the container.

3,733,003

FILING DEVICE

Melvin A. Textoris, Struthers, Ohio, assignor to The General Fireproofing Company, Youngstown, Ohio

Filed June 30, 1971, Ser. No. 121,853
Int. Cl. B65d 25/06
U.S. Cl. 220—22.3 8 Claims



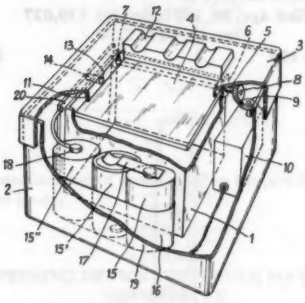
A file tray is provided with a medially disposed longitudinal slot having a centrally located enlarged recess laterally communicating with the slot and by means of which a compressor plate provided with a mounting shoe is attached to the tray.

3,733,004

DEVICE FOR OPENING AND CLOSING RECEPTACLES FOR THE RECEPTION OF INCANDESCENT MATTER

Jean Pierre Etourneau, 69 Boulevard Carnot, Le Vesinet, France

Filed Mar. 23, 1971, Ser. No. 127,155
Claims priority, application France, Mar. 25, 1970, 7010632
Int. Cl. B65d 43/16
U.S. Cl. 220—20.5 5 Claims



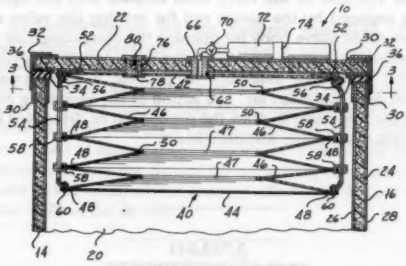
A device for opening and closing a receptacle in accordance with the presence or absence of incandescent matter is provided. One or a plurality of infra-red radiation detectors are mounted in the receptacle and in accordance with an electronic amplifier system and an electro-mechanical control system will cause a flap of the receptacle to open in the presence of incandescent matter and to close in the absence thereof.

3,733,005

DUNNAGE DOOR FOR CARGO BOX

Leonard P. Frieder, Jr., Waverly, Pa., assignor to Gentex Corporation, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,845
Int. Cl. B65b 3/00
U.S. Cl. 220—85 B 3 Cla



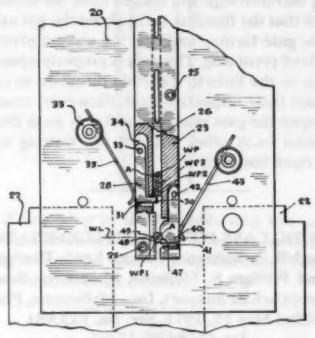
A dunnage door for use with a cargo box adapted to be partially filled with cargo from the back or the bottom toward the front or the top on which the door is assembled in which the interior of the door is provided with normally collapsed expansible means adapted to be expanded to fill the space between the door and the cargo to prevent movement of the cargo within the box during shipment.

3,733,006

WORK PIECE FEEDER FOR MACHINE

Adolph V. Klancnik, 1020 Glenview Road, Glenview, Ill.

Filed July 12, 1971, Ser. No. 161,777
Int. Cl. B65g 59/00
U.S. Cl. 221—262 9 Claims



Work pieces (nuts, studs, fasteners, etc.) in a magazine guideway are advanced from a temporary holding position to a locating position, there to be worked on by a rotating tool.

The work pieces are apertured, and a positive feed force is applied by a feed finger fitting the aperture in the work piece incidental to moving the work piece from the holding position to the locating position. Means are presented by switching the path of the feed finger into and out of the guideway. Thus, the feed finger is normally in the guideway during its advance stroke; at the end of the advance stroke, which is also the inception of the feed finger return stroke, the switch means is effective to move the feed finger out of the guideway; and at the end of the return stroke, the feed finger is restored or switched back to the guideway in engagement with the next work piece to be advanced.

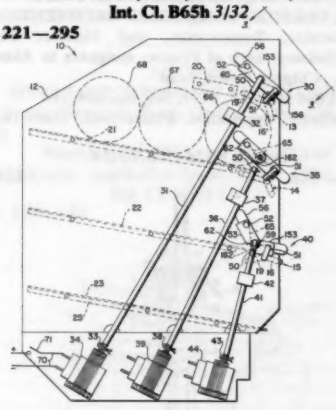
In one embodiment, the advance stroke of the feed finger moves the work piece in one step from holding position to locating position opposite the tool; in another embodiment, the work piece is advanced incrementally in stages to the holding position opposite the tool.

3,733,007

ARTICLE DISPENSING APPARATUS

Warren J. Ungerman, Hatboro, Pa., assignor to Captain International Industries, Ltd., Vancouver, British Columbia, Canada

Filed Feb. 17, 1972, Ser. No. 227,694
Int. Cl. B65h 3/32
U.S. Cl. 221—295 10 Claim



An article dispenser having shelves inclined downwardly toward the front for receiving a plurality of articles thereon to

be dispensed, and a gate at the front of each shelf permitting removal of one article at a time. As the gate is swung up to release the front article, a rear part thereof prevents removal of the remaining articles. A control mechanism which moves the gate up and back includes first and second interconnected abutting links, the first link pivotally connected on the axis of a pin passing therethrough and spaced from the turning axis of the gate, such that the first link turns about the pin axis and orbits about the gate turning axis and the second pivotally connected to a fixed pivot axis. The gate is properly opened by applying a force to the links in a certain direction to easily turn the links about their respective axes. However, unauthorized attempts to open the gate manually will only push the abutting surfaces against each other without the turning movement necessary to open the gate.

3,733,008

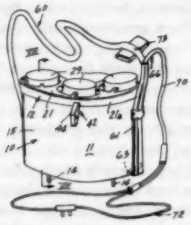
CARRYING CASE FOR OXYGEN GENERATORS

John P. Churchill, Indiatlantic; Tommy Lewis Thompson, Melbourne, and William S. McBride, Melbourne Beach, all of Fla., assignors to Life Support, Inc., Melbourne, Fla.

Filed May 17, 1971, Ser. No. 143,851

Int. Cl. A61m *15/00*

U.S. Cl. 222—6 **18 Claims**



Lightweight, compact, attractive, reliable and convenient to use carrying cases for replaceable oxygen generating cells or candles having mechanism for activating or igniting the cells or candles for delivering oxygen through a carrying strap to a canula or breathing mask. The carrying cases of this invention are suspended from a strap also serving as an oxygen conduit and are worn in the manner of a binoculars case to supply instant oxygen when needed by the wearer. These carrying cases with their replaceable oxygen generators or candles release heart and emphysema patients from heretofore required confinement to the vicinity of large heavy oxygen bottles.

3,733,009

VALVES FOR PRESSURIZED RECIPIENTS

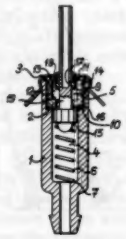
Philippe Rouzier, Beaurepaire, and Maurice Pelissier, Saint Barthelemy, both of France, assignors to Aluminium Suisse S.A., Chippis, Switzerland

Filed Mar. 15, 1971, Ser. No. 124,393

Claims priority, application Switzerland, Mar. 16, 1970, 3863/70

Int. Cl. B67d *1/08, 83/14*

U.S. Cl. 222—148 **12 Claims**



A valve for pressurized recipients comprises two separated chambers, in communication with pressurized liquid and pressurized gas respectively. An orifice in a clapper can be moved between the first chamber for distribution of product, the second chamber for purging by the issue of gas, and a closed position. A closure member movably mounted on the clapper can obturate the orifice to prevent purging during opening of the valve, while allowing purging during closing of the valve.

3,733,010

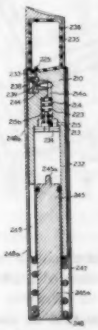
AIR PRESSURE OPERATED DISPENSER

Pasquale R. Riccio, Suffern, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,027

Int. Cl. B67d *5/54*

U.S. Cl. 222—193 **12 Claims**



A dispensing device in which the product to be dispensed is aspirated and sprayed by the discharge of pressurized air. A valve assembly has a product flow path therethrough and a compressed air flow path therethrough. The valve stem of the assembly is actuated to open the compressed air flow path, and a flap valve is actuated to open the product flow path. Aspirating means is provided at the upper end of said stem for bringing one end of each of said flow paths together. A piston-cylinder assembly is provided on the device having a cylinder with one end around the end of the compressed air flow path, a piston slidable in the cylinder, and a piston rod on said piston and rod on said piston and extending out of the other end of said cylinder. A product container means is connected around the end of the product flow path remote from the aspirating means. The end of the valve stem extends into the cylinder and is engaged by the piston rod for moving the valve stem relative to the valve body for opening the compressed air flow path when the piston is moved to the inner end of the cylinder adjacent the valve assembly to provide a predetermined amount of compressed air. The action of the aspirating means opens the flap valve to draw the product to be dispensed from the product container and dispense it.

3,733,011

FEEDING OF POWDERS

Richard E. Driscoll, Monroe, La., assignor to Cities Service Company, New York, N.Y.

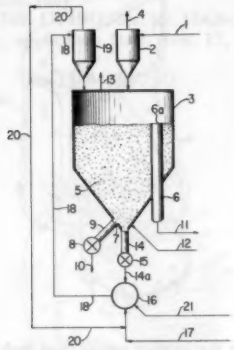
Division of Ser. No. 758,880, Sept. 10, 1968, Pat. No. 3,627,555. This application Feb. 8, 1971, Ser. No. 113,691

Int. Cl. B67d *5/54*

U.S. Cl. 222—193 **3 Claims**

Constant mass-rate feeding of powders is improved by supplying the powder to a feeder in fluid form, and at a uniform

bulk density, from a bed of the powder. The depth of the powder bed is maintained essentially constant, thus providing



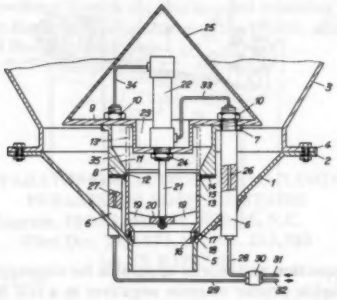
a more constant head of pressure upon the powder being supplied to the feeder.

3,733,012

DISPENSING DEVICE FOR A BULK MATERIAL RECEPTACLE

Gustav Grun, Lissberg/Oberhessen, Germany, assignor to Luco-Technic AG, Zurich, Switzerland

Filed June 5, 1972, Ser. No. 259,758
Int. Cl. B65g *65/62*
U.S. Cl. 222—193 7 Claims



A dispensing device for the metered discharge of bulk material from a receptacle including a vertically movable cylindrical or tubular slide located in a funnel-shaped dispenser. Actuating means, such as a hydraulic cylinder arrangement, or a winding cable are adapted to raise or lower the slide so as to provide a variable material outlet orifice in the lower end of funnel-shaped dispenser. Pressurized air may be introduced into the device for enhancing pneumatic conveyance of the material and prevent adherence thereof to the interior walls of the device.

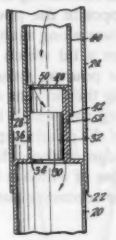
3,733,013

DOUBLE DIP TUBE AEROSOL

Ross L. Doyle, Ramsey, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,620
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.19 10 Claims

In an aerosol valve, a pair of dip tubes located one within the other and attached to the valve body for the valve, the outer dip tube extending to a point adjacent the bottom of the aerosol container and the inner dip tube extending from the outer tube and being reversed to terminate adjacent the area of the valve at the top of the aerosol container, and a gravity



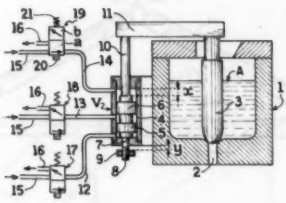
actuated sliding plug in a housing having two entrances arranged to close the inner dip tube when the aerosol is operated in an upright position, and closing the outer tube when the aerosol is used in inverted position.

3,733,014

CONTROL DEVICE FOR THE STOPPER-ROD OF A FOUNDRY POURING VESSEL

Andre Joseph Pflaum, Maidieres, France, assignor to Societe Des Fonderies De Pont-A-Mousson, Nancy, France

Filed Mar. 30, 1971, Ser. No. 129,459
Claims priority, application France, Apr. 2, 1970, 7011947
Int. Cl. B22d *37/00*
U.S. Cl. 222—504 4 Claims



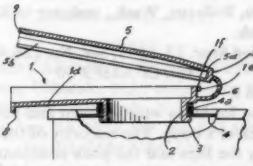
A control device for controlling the position of a foundry pouring vessel stopper-rod with respect to a pouring orifice. Long-travel raising means raise the stopper-rod off the pouring orifice when opening the orifice after which short-travel means lower the stopper-rod toward the orifice whereby the flow rate through the orifice is initially higher than the normal flow rate so as to initially heat the region around the orifice and melt any solidified metal adjacent the orifice.

3,733,015

SINGLE PRICE POURING SPOUT AND LID

Javier Sensat Marques, Paseo Carlos 1, No. 130, Barcelona, Spain

Filed July 29, 1971, Ser. No. 167,144
Claims priority, application Spain, Aug. 3, 1970, 161,102
Int. Cl. B65d *41/18*
U.S. Cl. 222—570 1 Claim



A pouring spout for containers containing liquids formed of a single part of resilient plastic material, comprising a cylindri-

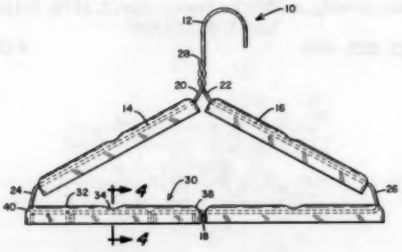
cal rotatable neck which fits the inside of the dispensing opening of the container, and possesses an outer peripheral reinforced rim exerting a grip under the edge of the opening. From this cylindrical neck extends radially a pouring spout provided with a lateral wall which runs along that portion of the cylindrical neck which is opposite the pouring spout and has an outer ledge which also runs along such wall. Furthermore, the pouring spout comprises a lid which completely covers the cylindrical neck and the pouring spout thus protecting them from dust and dirt. Along this lid runs a hanging wall provided with an inner reinforcing rim which in turn grips under the outer ledge of the wall of the pouring spout and of the cylindrical neck. This outer ledge of the cylindrical neck wall possesses a notch the purpose of which is to allow free passage of air into the interior of the container during the dispensing act.

3,733,016

CLOTHES HANGER ATTACHMENT

Robert M. Rood, 3325 Victoria Road, St. Paul, Minn.

Filed Feb. 1, 1971, Ser. No. 111,498
Int. Cl. A47j *51/094*
U.S. Cl. 223—86 8 Claims



A clothes hanger attachment for use with wire garment hangers is described. A unitary molded wire hanger attachment having end notches for preventing twisting on the wire and having molded wire attachment notches is described, the hanger attachment adapted to fit the sloped shoulder portion of the wire hanger or the cross-member of the hanger. A molded depression in the supporting surface provides shoulder strap restraint, and applies pressure to the wire hanger for mounting. A method for providing a scent in the hanger attachment during the molding process for subsequent release for deodorizing clothing, or providing a perfumed scent is also described.

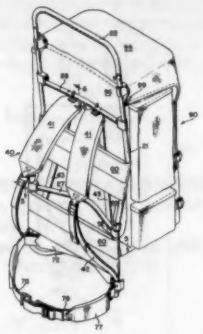
3,733,017

ADJUSTABLE PACK FRAME

Murray J. Pletz, Bellevue, Wash., assignor to K2 Corporation, Vashon, Wash.

Filed Mar. 22, 1971, Ser. No. 126,408
Int. Cl. A45f *3/00*
U.S. Cl. 224—8 R 5 Claims

A pack frame for hikes which is light and flexes with movement of the wearer's body. The majority of the carried weight is supported by the hips and the pack is adjustably suspended within the frame such that it may be placed in the most comfortable position relative to the frame. Shoulder straps are provided to keep the pack from pivoting about the weight supporting belt but carry very little strain themselves. The shoulder straps themselves are adjustable as to length and



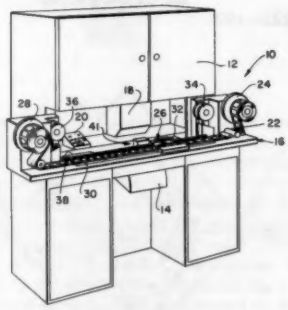
pivotable about the anchor points thus making the pack extremely versatile and comfortable for wearers of varying stature.

3,733,018

PRINT INSPECTION AND REPRINT APPARATUS

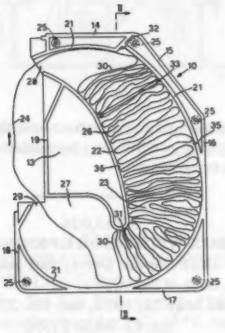
Joseph F. Breimayer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,799
Int. Cl. B65h *23/18*
U.S. Cl. 226—2 10 Claims



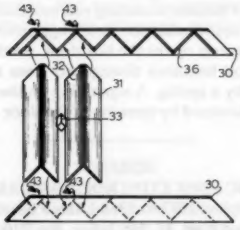
Print inspection and reprint apparatus for cooperation with a photographic printer wherein negatives in a roll of spliced film orders are advanced stepwise into the exposure station of the photographic printer in synchronization with the continuous advancement of finished photographic prints on a print roll through a print inspection station. The operator of the inspection apparatus inspects the prints as they advance continuously through the print inspection station, halts the advancement of unacceptable prints in the print inspection station, marks such unacceptable prints and reprints, with appropriate exposure correction, the corresponding negative located in the exposure station of the photographic printer. The prints continuously move through the inspection station at a variable, operator controlled speed. The stepwise negative advancement synchronized to the continuous advancement of the prints is controlled by a circuit responsive to print marks and order separation marks on the prints and splices attaching ends of successive negative filmstrips. Synchronization is maintained under conditions including: (1) full orders of prints and negatives; (2) two prints per negative; (3) fewer prints than negatives; and (4) fewer negatives than prints. When the photographic print material is exhausted in the printer, it is developed, and the remake prints may be synchronized to the original print orders to complete the customer print orders.

3,733,019
TAPE CASSETTES
Flavio Bisson, Montalto Dora, Italy, assignor to Ing. C. Olivetti & C., S.P.A., Turin, Italy
Filed Feb. 17, 1971, Ser. No. 116,043
Claims priority, application Italy, Feb. 17, 1970, 67512 A/70
Int. Cl. B65h *17/42*
U.S. Cl. 226—119 6 Claims



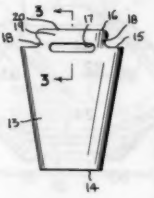
A tape cassette is disclosed including a holding chamber substantially in the shape of an upper case G having a downward branch including a tape entrance and an upward branch including a tape exit. The cross-sectional area of the downward branch increases to a maximum and then decreases to a minimum, the minimum occurring at the junction between the upward and downward branches. The walls defining the downward branch are also stepped providing a sudden increase in the cross-sectional area of the branch, allowing the tape to fall easily therethrough.

3,733,020
APPARATUS FOR AUTOMATIC NAILING OF PREASSEMBLED WOOD STAIRS
Harry T. Ingram, 1800 Rankin St., Raleigh, N.C.
Filed Dec. 29, 1971, Ser. No. 213,310
Int. Cl. B27f *7/06*
U.S. Cl. 227—5 12 Claims



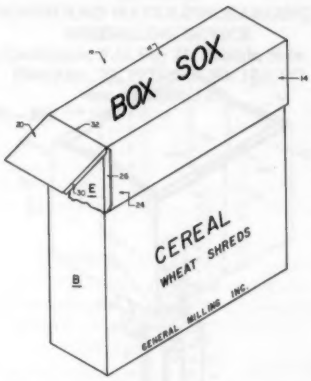
Precut and grooved stringers, precut treads and risers are temporarily secured together in the form of a stair which is then received by an apparatus which automatically indexes the stair step by step past left, right and top banks of nailers which nail the stringers and risers to the treads to produce a permanently secured stair.

3,733,021
FLEXIBLE MOUSTACHE CUP
Maxine G. Levin, Westhill Drive, Gates Mills, Ohio
Filed May 28, 1971, Ser. No. 147,897
Int. Cl. B65d *3/28, 3/06*
U.S. Cl. 229—1.5 B 3 Claims



A drinking cup formed of paper stock or other resiliently flexible sheet material and having a movable upper lip protector extending therefrom and integrated therewith for snap action retention in a position of either non-use or use.

3,733,022
UNITARY HINGED PLASTIC PROTECTOR FOR OPENED SHELF-STORAGE TYPE BOXES
Anita L. Kapiloff, 2845 McGill Terrace, N.W., Washington, D.C.
Filed Apr. 16, 1971, Ser. No. 134,709
Int. Cl. B65d *43/16*
U.S. Cl. 229—7 R 2 Claims

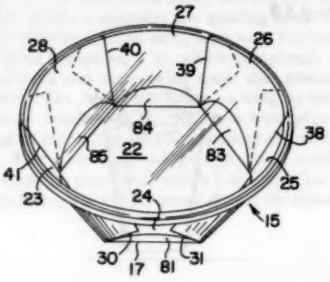


A one-piece plastic box top for pantry-type food boxes and the like, comprising top, two sides, and two ends, with one entire end pivoted on a unitary hinge to open downward providing complete clearance for contents of a box to be poured without touching the box top, and with the other end of the box top sealed to the sides to position them, assuring a tight fit; means are provided to hold the hinged door in the open position and in the closed position.

3,733,023
CUP-SHAPED CARTON WITH GUSSETED SEAMS
Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Apr. 13, 1971, Ser. No. 133,686
Int. Cl. B65d *5/24, 3/04*
U.S. Cl. 229—31 4 Claims

A container or package which is adapted for use in the packaging of a variety of products where the container is

formed from a single paperboard blank which is cut and scored so that it may be folded into a cup-like or dish-like body shape with gusseted side wall seams and a marginal rim



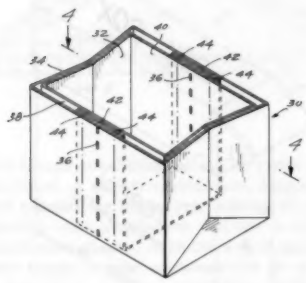
formation enabling the container to be filled with a liquid product without leakage at the seams and to be readily closed by the application of a cover member secured or seated on the rim formation.

3,733,024

CONTAINER

Robert W. Bolling, Jr., Frank S. McCall, and Henry J. Rawl, all of Savannah, Ga., assignors to Union Camp Corporation, Wayne, N.J.

Filed Sept. 18, 1969, Ser. No. 858,947
Int. Cl. B65d *33/02*
U.S. Cl. 229—55 6 Claims



A paper container of the bag type is provided wherein the wall structure incorporates an elastic, longitudinally oriented strip overlying a weakened section of the wall. The elastic strip is bonded to the wall along bonding zones on both sides of the weakened section of the wall, leaving the area of the strip overlying the weakened section free and unattached to the wall. This arrangement concentrates undue dynamic and static stresses at the weakened section of the wall where they are taken up by the elastic strip after rupture of the weakened section.

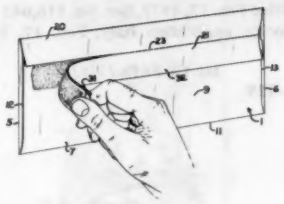
3,733,025

EASY OPENING ENVELOPE

Walter L. Hiersteiner, Shawnee Mission, Kans., assignor to Tension Envelope Corporation, Kansas City, Mo.

Filed June 10, 1971, Ser. No. 151,691
Int. Cl. B65d *27/16, 27/34*
U.S. Cl. 229—85 3 Claims

The seal flap of an envelope has a portion reinforced by folding and adhesive connection, the reinforced portion being divided from the remainder of the seal flap by a line of tear perforations. A releaseable adhesive connection is made



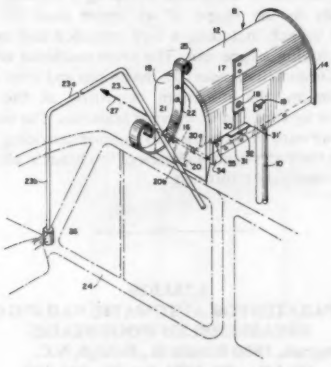
between the outside of said portion and the back of the envelope whereby said portion may be peeled across the back of the envelope to open same.

3,733,026

MAIL BOX WITH DOOR OPENING MEANS

Lacy A. Rowe, 1851 Skycoe Drive, and John A. Whitley, Rt. No. 1 Box 64, both of Salem, Va.

Filed May 22, 1972, Ser. No. 255,205
Int. Cl. B65d *91/00*
U.S. Cl. 232—35 9 Claims



A roadside mail box is especially adapted to be opened and closed by movement of a mail service vehicle past it. The box has a door provided with an outwardly projecting arm which is engageable by a slanted actuating rod mounted on the vehicle. As the vehicle approaches the box, engagement of the actuating rod with the arm opens the box door. As the vehicle leaves the box, the rod becomes disengaged from the arm and the door is closed by a spring. A signal flag on the box, if raised, is automatically lowered by opening of the door.

3,733,027

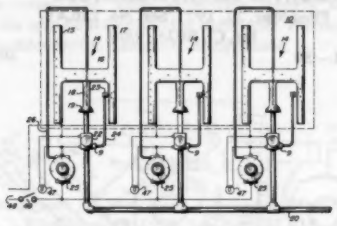
ELECTRIC FUEL CONTROL FOR GAS GRIDDLE

Clarence H. Napier, 3207 N. 53rd Lane, Phoenix, Ariz.

Filed Mar. 31, 1972, Ser. No. 240,196
Int. Cl. G05d *23/12*
U.S. Cl. 236—20 9 Claims

This specification discloses a griddle comprising a thick griddle plate, a plurality of burners positioned below the plate, a gas header line connected to each of the burners by a branch line in which is included a solenoid operated valve, and a thermostat control switch operatively associated with each solenoid valve with the operation of the switch being controlled by a mercury filled capillary tube, the free end of which is in-

serted in the griddle plate in close proximity to the upper surface thereof with the lower portion of the tube being insulated



from the griddle plate. A pilot is associated with each burner and is connected to the input side of the solenoid valve for that burner.

3,733,028

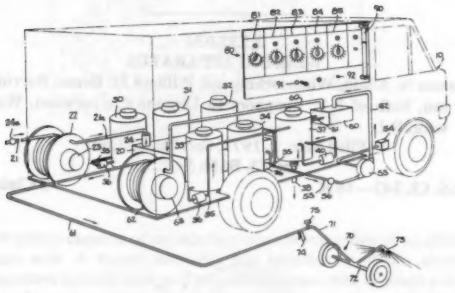
METHOD OF SPRAYING TURF AND THE LIKE

James B. McVey, Hill City, S. Dak.

Division of Ser. No. 811,918, April 1, 1969, Pat. No. 3,612,356. This application Mar. 12, 1971, Ser. No. 123,630

Int. Cl. A62c *1/12*

U.S. Cl. 239—10 **12 Claims**



The disclosure relates to a method and apparatus for spraying a predetermined mixture of liquid chemicals onto turf and the like. A small size panel truck is provided with a plurality of containers for housing liquid chemicals, a means for automatically mixing the chemicals in accordance with a predetermined selection, means for connecting an external water supply to the vehicle, and means for introducing chemicals into the water which is then ultimately applied to the turf or the like.

3,733,029

SNOW PRECIPITATOR

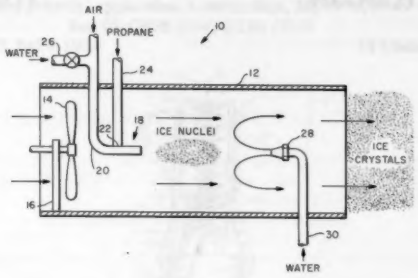
William E. C. Eustis, Cambridge, and Wallace E. Howell, Lexington, both of Mass., assignors to Hedco, Inc., Bedford, Mass.

Division of Ser. No. 854,103, Aug. 29, 1969. This application July 23, 1971, Ser. No. 165,689

Int. Cl. A01g *15/00*; **E01h** *13/00*

U.S. Cl. 239—14 **12 Claims**

A snow-making apparatus wherein ice nuclei are generated by spontaneous nucleation in a separate, distinct nucleation zone. Water, slightly above the freezing temperature, is discharged through a nozzle and broken up into water droplets. The water droplet formation and ice nucleation formation are separately controlled. A propeller at one end of the housing moves an air mass through the housing to mix the ice nuclei and water droplets. The water droplets are infected



with the ice nuclei, the ice-infected water droplets discharged into the atmosphere, and snow-like particles ultimately fall to the ground. Structure is provided to control separately each of the steps; namely, ice nuclei formation, the water droplet formation, and the flow of the air stream.

3,733,030

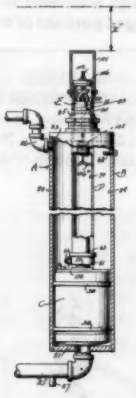
UNDERGROUND WATER DISCHARGING AND SPRINKLING DEVICE

Lauren M. Carstenson, P.O. Box 21, Phillips, Nebr.

Filed Mar. 29, 1971, Ser. No. 128,737

Int. Cl. B05b *3/04*

U.S. Cl. 239—205 **6 Claims**

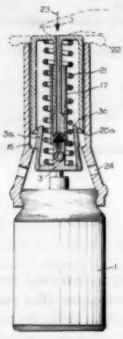


An underground water discharging and irrigation sprinkler including an elongated housing having a riser tube slidably mounted therein, a water motor being mounted adjacent the lowermost end of the riser tube and a discharge nozzle being provided adjacent the other end thereof, and water inlet means connected with the housing for selectively raising the riser tube within the housing to elevate the nozzle thereof above the ground and lowering the riser tube within the housing to retract the nozzle belowground.

3,733,031
COMPRESSED AIR OPERATED DISPENSING SYSTEM

Jean Marand, Saint-Benoit, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 19, 1970, Ser. No. 90,897
Int. Cl. B05b 7/30
U.S. Cl. 239—349 8 Claims

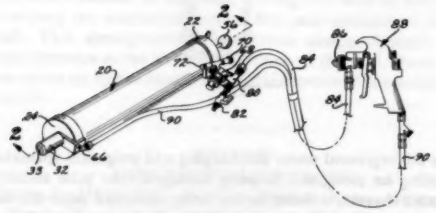


A product container having a valve stem is coupled to the first of two flow passages in a coupler-aspirator. The flow passages join at a nozzle. The second flow passage communicates with a first chamber. A guide fits over and extends above the product container and has ridges on the interior thereof. Notched winged portions of the coupler-aspirator are retained on the ridges. A cylinder having a second chamber is coupled to the coupler-aspirator and positioned therebetween is a flexible annular gasket. A hollow valve stem having radial openings is mounted for movement within the chambers. The inner periphery of the gasket obturates the radial openings. A piston slides within the cylinder. Integral with the piston is an actuating member, and integral with the actuating member is a downwardly extending flange concentric around the piston. The bottom of the flange is beveled to mate with the beveled upper edges of the winged portions of the coupler-aspirator.

3,733,032
QUICK LOAD PRESSURE POT

Harold D. McLeod, 11617 Ryerson Avenue, Downey, Calif.

Filed Mar. 27, 1972, Ser. No. 238,595
Int. Cl. B05b 9/00
U.S. Cl. 239—373 10 Claims

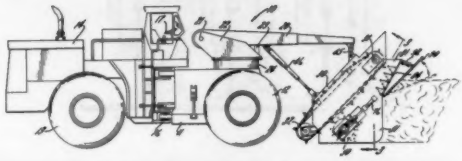


A pressurized cylinder for receiving liquids to be sprayed from connected equipment. The cylinder includes a movable piston that facilitates quick loading and cleaning as it is adjusted to predetermined positions.

3,733,033
COMPOST AND REFUSE SHREDDING AND SHIFTING APPARATUS

Herbert T. Cobey, P.O. Box 313, Crestline, Ohio

Filed Mar. 22, 1971, Ser. No. 126,417
Int. Cl. B02c 19/00
U.S. Cl. 241—30 20 Claims

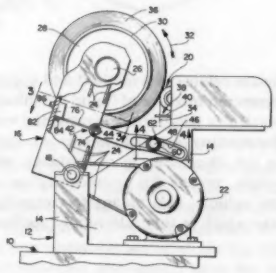


An improved apparatus for shredding, shifting and aerating organic wastes, refuse and other material that includes an endless web carrying a plurality of outwardly projecting elements which is moved in an upwardly and forwardly extending orbital path as the working face of the web engages the material and also includes a rotatable drum having outwardly extending elements that is positioned forwardly of the web near the lower portion of the orbital path. The plane of the web is adjustable relative to both the longitudinal and vertical axis of the chassis and the drum is vertically adjustable in a direction generally parallel to the plane of the upwardly moving web. In the preferred embodiment, the web and drum are supported from a self-propelled chassis.

3,733,034
WINDING APPARATUS

James N. Allam, Woonsocket; and William M. Bense, Barrington, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

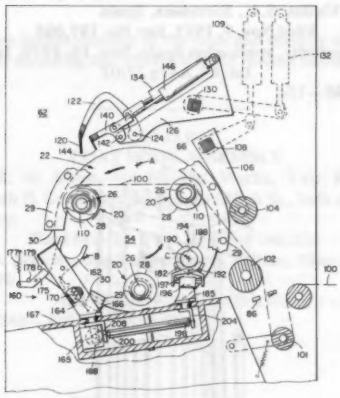
Filed Mar. 1, 1971, Ser. No. 122,601
Int. Cl. B65h 54/02
U.S. Cl. 242—18 R 8 Claims



Winding apparatus, such as a Model 959 take-up machine, manufactured by Leesona Corporation, Warwick, R.I., has a base on which a spindle frame is pivotally mounted for receiving a yarn package and urging the package against a roller bail mounted on the base. As the package increases in diameter during winding, the spindle frame is progressively moved away from the roller bail which continues to engage the face of the package. The package may tend to bounce or otherwise move away from and toward the roller bail for various reasons, such as an eccentricity in the longitudinal face of the package developing during winding or caused by an eccentric package core. A friction type dampener is provided for dampening such movement of the package on and off of the bail. This dampener has a frictional dampening part fixed to the base and movably secured to the spindle frame by a leaf spring hav-

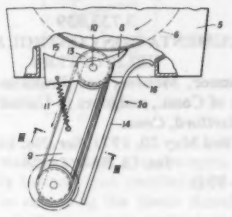
ing one end fixed to the dampener and the other end secured to the spindle frame to eliminate any play therebetween in the direction of movement of the spindle frame toward and away from the roller bail, while permitting relative movement between the spindle frame and the dampener. Frictional retardation provided by the dampener is adjustable.

3,733,035
WINDER
Charles M. Schott, Jr., Way Road, Gloucester, Mass.
Filed Mar. 10, 1971, Ser. No. 122,815
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 A **30 Claims**



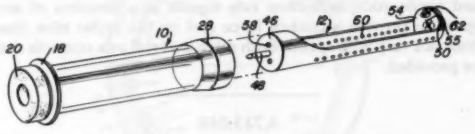
Winders capable of production of consumer rolls of an elongated web. A turret assembly has spindles rotatable about respective spindle axes and movable along a path through a series of index stations. A spindle drive is operable to produce spindle rotation at least at the start-up station and a turret drive is operable to move the spindles through the stations. A roll unloader is adjacent the roll unload station, a core loader is adjacent the core load station, and the loader and unloader each have elements movable parallel to the spindle axes to respectively slide fresh cores over and remove wound rolls from the spindles. A roll starting or tucking assembly comprises an enveloping member mounted adjacent the start-up station and movable across the path between a retracted position and an enveloping position adjacent a spindle at the start-up station, and a web tucking member mounted for movement about a tucking axis between a retracted position and a tucking position. The tucking member when in the tucking position extends between the enveloping member and the spindle at the start-up station, whereby the enveloping and tucking members cause the web to envelop the spindle from opposite sides thereof. Also shown are a core loader in the form of a tray and pushers; a core unloader in the form of grooved rings confined to the spindles and engaged by a stripping fork; simultaneous dependent drive of the loader and unloader; a hopper having a wall moving to and fro through a special path; a triggered idler method of controlling belt drive of the spindles and other important features. In another aspect spindle start-up for webs having perforations is accomplished by a blunt-edged blade which by impact breaks the perforations, with the free end carried about the blade edge into tucked relation. For non-perforated webs there is a severing member downstream from the tucking blade.

3,733,036
CASSETTE FEED-OUT DEVICE
Friedrich Eitzenberger, Neustadt, Austria, assignor to Karl Vockenhuber, and Raimund Hausen, both of Vienna, Austria
Filed Aug. 20, 1971, Ser. No. 173,485
Claims priority, application Austria, Sept. 28, 1970, 8749
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—192 **11 Claims**



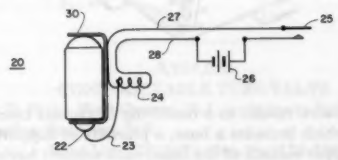
A feed-out device for extracting the leading end of a strip wound on a cassetted reel has a stripper hinged to the forward end of a support, which is inserted into the cassette during feed-out. The support is provided with a bearing surface which engages the strip roll periphery, and the stripper is biased resiliently to engage the roll periphery — thus irrespective of the size of the roll, the thrust of the stripper against its surface and its angle of attack remain substantially constant.

3,733,037
CLOSURE MEANS FOR PNEUMATIC CARRIER
John C. Vandiveer, 4205 Benjestown Road, Memphis, Tenn.
Filed Oct. 14, 1970, Ser. No. 80,753
Int. Cl. B65g *51/06*
U.S. Cl. 243—35 **7 Claims**



A closure assembly for pneumatic tube carriers that enables quick attachment and release of a liner therein for both closing the carrier and permitting easy withdrawal of the contents thereof.

3,733,038
DISCHARGE DEVICE FOR ELECTROSTATIC CHARGES
Kurt Ikrath, Elberon, and Kenneth J. Murphy, Red Bank, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 4, 1971, Ser. No. 140,171
Int. Cl. H05f *3/06*
U.S. Cl. 244—1 A **4 Claims**



This disclosure relates to aircraft and particularly to devices for reducing the triboelectric or electrostatic charge on an air-

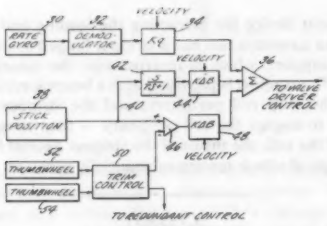
craft. More particularly, this disclosure relates to a device for penetrating the gaseous dielectric insulation around an aircraft to discharge the accumulated charge on said aircraft. More particularly, this disclosure relates to the projection of a stream of conductive gases, at high velocity, through the air surrounding an aircraft, towards ground or any point of high potential gradient with respect to the aircraft, to provide a conductive discharge path through the air to neutralize any electrostatic charge on the aircraft.

3,733,039

FEEL AUGMENTATION CONTROL SYSTEM FOR HELICOPTERS

Sean J. O'Connor, Monroe, and Franklin A. Tefft, Killingworth, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 20, 1971, Ser. No. 146,572
Int. Cl. B64c *13/08*
U.S. Cl. 244—77 D **7 Claims**



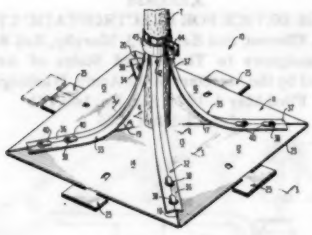
The handling capability of helicopters at high speed is enhanced by applying a force to the cyclic stick which is related to the resultant load factor induced on the helicopter by movement of the cyclic stick by the pilot. A feed augmentation system responds to craft pitch rate, cyclic stick deflection and cyclic stick deflection rate signals as a function of airspeed to provide a control force feel on the cyclic stick that does not vary with speed. Both pitch and roll axis controls can be provided.

3,733,040

NO-TILT CHRISTMAS TREE STAND

Camile J. Rocquin, 6011 Airline Highway, Metairie, La.

Filed June 28, 1971, Ser. No. 157,311
Int. Cl. A47g *33/12*
U.S. Cl. 248—48 **8 Claims**



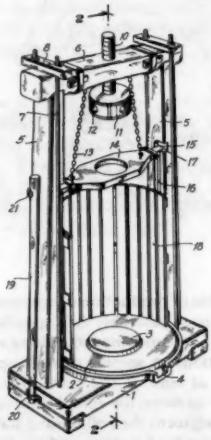
This disclosure relates to a nontilting Christmas tree stand or the like which includes a base, a plurality of supports carried by an upper surface of the base, each support having terminal upper and lower end portions, first means removably securing the lower end portions of each support to the base, and second means for removably securing the upper end portions of each support to an associated tree. The first means are preferably in the form of a plurality of tabs formed in the base or in a plate sandwiched between the base and the support lower end portions which engage in slots formed in the support lower end portions. The second means are simply openings in the support upper end portions which receive nails, screws or the like and/or an adjustable clamping band which exteriorly surrounds the support upper end portions. Moreover, to impart stability to the stand the same is provided with outriggers or feet which are likewise interlockingly secured to the base by tabs and slots with the outriggers having arms which pass through openings formed in a peripheral reinforcing bead of the base in one embodiment of the invention.

3,733,041

DEVICE FOR THE DISPLAY OF BOTTLES

Juan Cusco Clavera, San Sadurni de Noya, Spain, assignor to Segura Viudas, S.A., Barcelona, Spain

Filed Nov. 9, 1971, Ser. No. 197,005
Claims priority, application Spain, Nov. 10, 1970, 163,552
Int. Cl. A47g *23/02*
U.S. Cl. 248—154 **6 Claims**



A display device for a bottle of wine has features simulating an antique wine press. The device includes a base with means to center the bottle and a structure carrying a clamp that holds the bottle firmly on the base. A collar fits the neck of the bottle to secure the bottle transversely relative to the structure.

3,733,042

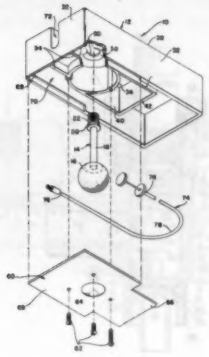
CAMERA STAND

Vernon H. Jungjohann, Rochester, and Ronald E. Lohrman, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,254
Int. Cl. F16c *11/06*
U.S. Cl. 248—181 **4 Claims**

A stand for supporting a photographic camera includes a recess for receiving and storing a cable release. The stand has a base and a support arm, with a ball head at one end of the

support arm movably supported within bearing means in the base by a cover spring. The cover spring extends over a portion of the hollow interior of the base and thereby defines the recess for receiving and storing a cable release usable with the camera.



3,733,043

COAT HOOK ASSEMBLY

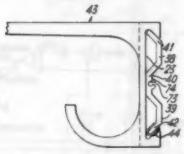
Julian R. H. Binns, c/o Harvest Works, Vale Road, and Kenneth H. Grange, 7A Hampstead High St., both of London, England

Filed May 25, 1971, Ser. No. 146,721

Claims priority, application Great Britain, May 28, 1970, 25,723/70

Int. Cl. A47f *5/06*; A47h *1/02*

U.S. Cl. 248—225 **2 Claims**



A coat hook or hat and coat hook assembly comprising a wall plate, which may be a length of an extruded section, which is secured to a wall or backboard, and one or more coat and/or hat and coat hooks, the rear part of each hook and the front part of the wall plate being so formed that the hook or hooks may be slid laterally into prosition on the wall plate and then locked into position. End caps may be fitted to the two ends of the assembly.

3,733,044

TISSUE CONTAINING BOX HOLDER

Walter P. Rabner, 13861 Fresh Meadow, Apt. 1-H, Seal Beach, Calif.

Filed Jan. 11, 1971, Ser. No. 105,358

Int. Cl. A26c *33/00*

U.S. Cl. 248—313 **1 Claim**

A tissue containing box holder that includes first and second parallel, spaced, cross pieces that are connected by a backing plate, and fastening means for securing the plate to a vertical wall surface. The first cross piece supports at least one downwardly projecting prong that has the free end extremity thereof spaced from a longitudinally extending apex on the second cross piece a distance less than the width of a conventional tissue holding cardboard box such as in which Kleenex is retailed.

The edge portions of such a box are rigid and the walls extending between the edges are resilient. When a Kleenex box has a first side wall placed in pressure contact with the prongs

and a second side wall in contact with the apex, the side walls are bowed inwardly towards one another, and any force exerted on the box in removing the tissue therefrom tends to pivot the box towards the prongs to increase the pressure engagement therewith, and prevent the box from being inadvertently displaced from the holder.

3,733,045

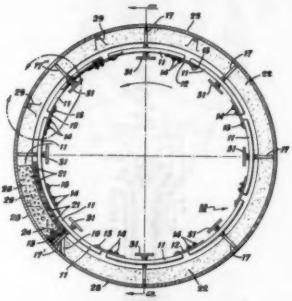
APPARATUS FOR LINING ROTARY KILNS

Larry L. Mann, Mexico, Mo., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 18, 1971, Ser. No. 116,484

Int. Cl. B28b *7/30*

U.S. Cl. 249—184 **3 Claims**



A method and apparatus for lining rotary kilns with monolithic castable refractory comprises rings made of segments preferably adjustably attached to each other so the rings can be adjusted to desired circumference, the rings having removable spacer elements which support the rings on and space them from the kiln shell. Forms are attached to the rings and castable refractory placed between the forms and the kiln shell to form the lining. The lining is cast in sections, the kiln being rotated so that the casting of each section is done in a downward direction. The spacer elements are removed from each section prior to casting refractory material in that section.

3,733,046

CONSTRICTABLE TUBE VALVE

Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation, Roseland, N.Y.

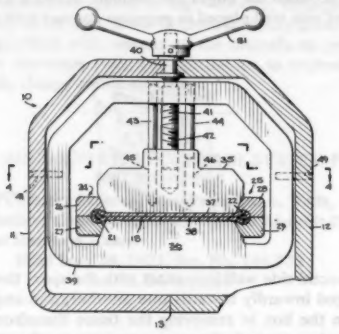
Filed Mar. 22, 1971, Ser. No. 126,436

Int. Cl. F16k *7/06*

U.S. Cl. 251—8 **17 Claims**

Clamps disposed at opposite sides of a tube of PTFE resin or other crack sensitive material maintain regions at each side of

the tube in constantly constricted fluid sealing condition free from crack inducing flexure secured in sealing embrace about a smoothly curving filler piece. In combination with a pair of



compressor members there is thus provided a constrictable tube valve having a tube of crack sensitive material which wild not crack upon valve manipulation.

3,733,047

COMPENSATING PLUNGER FOR SOLENOID VALVE AND METHOD OF MAKING

Walter E. Allen, Prospect, Conn., assignor to Peter Paul Electronics, New Britain, Conn.

Filed June 10, 1971, Ser. No. 151,811
Int. Cl. F16k *31/02*
U.S. Cl. 251—141 **12 Claims**

A fluid control valve for an hydraulic system and having a compensating plunger movable in response to energization of a solenoid to alter the path of hydraulic fluid flow through the valve. The plunger is generally cylindrical and has a bore extending axially therethrough and containing elastomeric inserts at opposite ends thereof. Each insert has a seating surface for sealing engagement with a respectively associated valve seat. One of the inserts is movable relative to the plunger and spring biased to its seating position. The inserts are constructed and arranged so that the portion of each insert which defines the seating surface thereof is substantially free of internal stress.

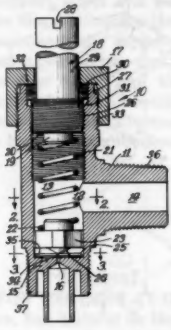
3,733,048

METERING VALVE

Jan A. Hiszpanski, Chicago, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 47,285, June 18, 1970, abandoned. This application Feb. 11, 1971, Ser. No. 114,597
Int. Cl. F16k *15/14*
U.S. Cl. 251—205 **35 Claims**

A fine metering valve having a deflectible beam and means for deflecting the beam adjustably in close spaced juxtaposition to a valve port thereby to vary the rate of fluid flow therethrough. A displacement reduction means is utilized in providing the deflection of the beam to give high accuracy in



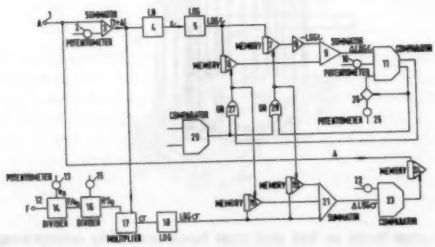
the metering of the fluid flow. The deflecting means may be manually operated or automatically operated, as desired. Means are provided for positively displacing the beam to fully close the valve when desired.

3,733,049

DETERMINATION OF YIELD ELONGATION DURING TENSILE TESTING

Christian van den Hove, Bressoux, and Lucien Renard, Liege, both of Belgium, assignors to Centre National De Recherches Metallurgiques, Brussels, Belgium

Filed Mar. 4, 1971, Ser. No. 121,104
Claims priority, application Belgium, Mar. 5, 1970, 746930
Int. Cl. G06g *7/24*; G01b *7/16*
U.S. Cl. 235—151.3 **9 Claims**



The load, elongation, and width transducers of a tensile test machine are connected to an array of analog calculation elements arranged to calculate the yield elongation.

3,733,050

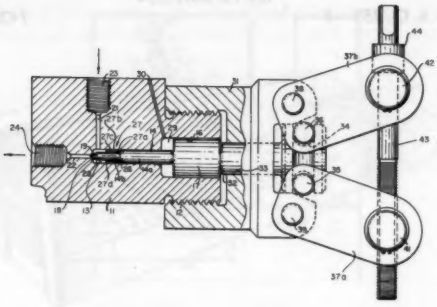
HIGH PRESSURE VALVE

Peter R. Gordon, Los Gatos, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 16, 1971, Ser. No. 115,607
Int. Cl. F16k *5/00*
U.S. Cl. 251—214 **5 Claims**

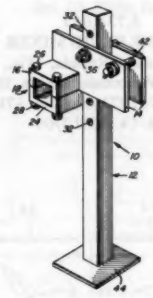
A high pressure valve in which the valve needle is guided in a well formed in the valve body so that it can be moved to seat one end in a valve seat formed at the bottom of said well. Outlet and inlet passages communicate with the opposite sides of the seat whereby the flow of fluid between said passages can be controlled by axial movement of the valve needle. The

valve needle is arranged and formed whereby the pressure of the fluid being controlled applies a retracting force to retract



the valve needle. The valve needle drive means cooperates with said valve needle to overcome the retracting force and advance the needle into seating engagement in the valve seat.

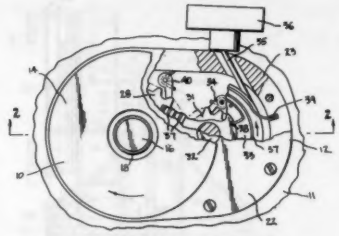
3,733,051
TRAILER JACK
Robert A. Bollinger, 410 West 21st Street, Lumberton, N.C.
Filed Apr. 30, 1971, Ser. No. 138,898
Int. Cl. B66f 7/22
U.S. Cl. 254—94 **2 Claims**



A trailer jack comprising a two-part axle engaging collar adapted for slidable positioning on the axle and a lifting shaft pivoted between a pair of mounting plates affixed to the collar. The shaft, in its retracted position, is retained by a retaining pin engaged through the shaft and opposed holes within the mounting plates. Upon a release of the retaining pin, the jack pivots downward into engagement with the ground at an angular relation thereto with movement of the vehicle causing an upward riding of the engaged vehicle axle onto the shaft. The shaft engages the collar upon arrival at a vertical position with the axle elevated.

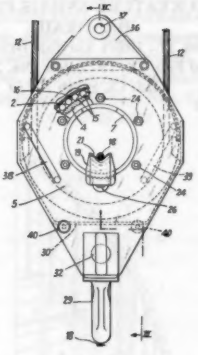
3,733,052
SHIPBOARD WINCH WITH RETRACT REEL ACTUATOR
John R. Lovett, 23604 Lake Road, Bay Village, Ohio
Filed May 24, 1971, Ser. No. 146,080
Int. Cl. B66d 1/30
U.S. Cl. 254—150 R **9 Claims**

A manually operated winch intended especially for use in close quarters, such as on board sailing ships or the like, which uses a spring-biased retract reel and pull cord for winch actuation. The winch operating mechanism can be adapted to existing winch installations of the hand-lever type, as well as being



provided as original equipment. In a modified form of the invention, a two-speed winch mechanism is provided using the same principle of retract reel actuation.

3,733,053
PULLEY BLOCKS FOR HOISTING
Georges Haulotte, Rue de la Chambolle, 73 Barberaz, France
Filed May 13, 1971, Ser. No. 142,925
Claims priority, application France, May 14, 1970, 7017582
Int. Cl. B66d 1/36
U.S. Cl. 254—192 **7 Claims**

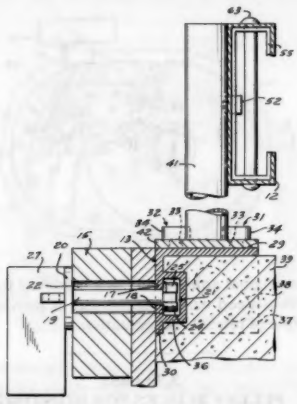


Pulley block comprising at least one rim having a groove for receiving a flexible tie, such as rope, cable or chain, mounted for rotation on an annular part, characterized in that the said annular part is designed and adapted to receive and support a suspension member for a load to be handled.

3,733,054
SAFETY FENCE
Bernard Storch, 81-57 259th St., Floral Park, N.Y.
Filed Apr. 28, 1972, Ser. No. 248,561
Int. Cl. E04h 17/02
U.S. Cl. 256—59 **11 Claims**

A safety fence includes a plurality of posts having brackets and telescopic rails which are coupled to and supported by the brackets. The end sections of the rails include holes which are engaged by latches on the brackets to hold the rails in place. Each post is coupled to an anchor which is secured to a form of the type used to contain poured concrete. Each anchor is secured to the form by a rotatable shaft extending through the form and having a head at one end and a cam on the other, the cam being engageable with a follower on the anchor. The head of the shaft includes a handle. If the handle is rotated in a predetermined direction when the cam and follower are engaged, the anchor and the head are caused to securely abut

against the form, thereby securing the anchor. The anchor includes an enclosure which prevents contact between the cam and subsequently poured concrete. When the poured concrete



has set it further secures the anchor, thereby permitting removal of the rotatable shaft and the form while leaving the anchor secure.

3,733,055

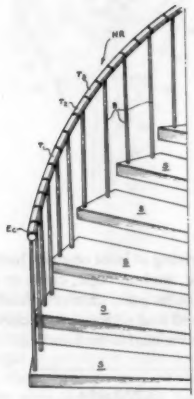
VARIABLE CURVATURE AND/OR PITCH STAIRWAY HANDRAIL

William J. Hughes, Jr., 10201 Mayfair Drive, Baton Rouge, La.

Filed Feb. 18, 1972, Ser. No. 227,480

Int. Cl. E04b *17/14*

U.S. Cl. 256—59 **8 Claims**



A variable curvature and/or pitch handrail for the balustrade (railing) of a circular, spiral and curved stairway which is capable of being assembled on the site, comprising a plurality of relatively short-length, generally cylindrical handrail sections each having an axial bore therethrough, rotatable washer-form wedges adapted to be interposed between the sections of each pair thereof, an elongate cable adapted to be threaded through the bores of end-to-end related sections and the center openings of the washer-form wedges interposed therebetween, means for tensioning the cable in manner as to secure said sections and washers together to the form of a rigid handrail, said washer-form wedges incorporating readily accessible means whereby they may be individually rotated with respect to one another and to the cylindrical handrail sections between which they are interposed thereby to "set" the curvature and/or pitch of the hand-rail to that desired.

3,733,056

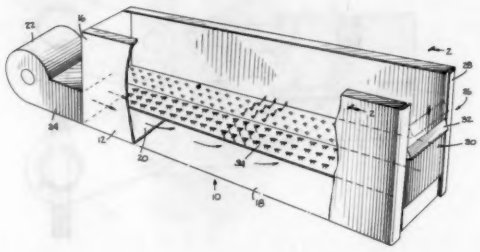
FLUIDIZED BED AND METHOD OF TREATING GRANULAR MATERIAL

Leong Q. Fong, 5880 Castano Drive, San Jose, Calif.

Filed Jan. 11, 1971, Ser. No. 105,327

Int. Cl. B01f *5/24*

U.S. Cl. 259—4 **7 Claims**



The bed includes a deck having a plurality of openings and side walls defining a trough with the deck. A plenum below the deck supplies air through the openings for fluidizing material in the trough, the openings being arranged to direct air in a manner to establish a predetermined flow pattern for circulating and mixing the material. In one form hereof, the flow direction is transversely of the bed to provide a circular mixing action. In another form, the openings are configured to provide both transverse and horizontal components of flow whereby the material is circulated as it moves downstream through the trough.

3,733,057

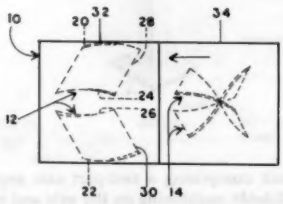
IN-LINE FLUID MIXER

John B. Kahoun, Wisconsin Rapids, Wis., assignor to Consolidated Papers Inc., Wisconsin Rapids, Wis.

Filed Sept. 7, 1971, Ser. No. 178,277

Int. Cl. B01f *5/00*

U.S. Cl. 259—4 **8 Claims**



An in-line spiral mixer characterized by successive left and right hand spaced spiral vanes disposed within a cylindrical tube. Each of the vanes comprises at least two separate parts with a central opening therebetween. The leading edge of each part is tapered from the outer to inner ends in the direction of fluid flow to minimize accumulation of material on the edge and cause self cleaning.

3,733,058

DOUGH PORTIONING AND KNEADING MACHINE

Helmut Konig, Ursprungweg 70-72, Graz, Austria

Filed Mar. 8, 1972, Ser. No. 232,756

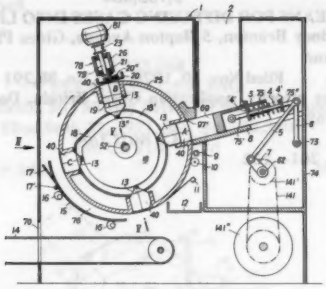
Claims priority, application Austria, Feb. 26, 1971, A 1698

Int. Cl. A21c *7/06*

U.S. Cl. 259—185 **21 Claims**

A dough portioning and kneading machine has a frame on which a drum is rotably mounted around a horizontally

disposed shaft. The drum has pocket openings in its circumference to receive dough supplied from a hopper. The drum is stepwisely rotated and has pistons in each of the pocket openings which are reciprocally moved by a cam means having cam surfaces coacting with the pistons. A kneading tool is arranged above the drum for kneading the dough in the pocket openings during which kneading operation the volume of the pocket openings is increased by means of rotating the cam means relative to the drum.

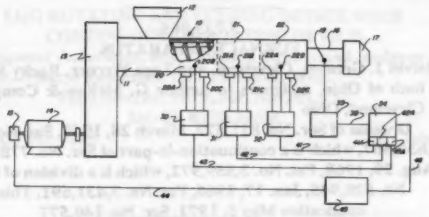


3,733,059

PLASTIC EXTRUDER TEMPERATURE CONTROL SYSTEM

Glenn A. Pettit, Bloomington, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Aug. 10, 1971, Ser. No. 170,585
Int. Cl. B29b 1/10
U.S. Cl. 259—191 **7 Claims**



A temperature control system for controlling plastic extruders wherein a tachometer generator signal dependent upon motor speed is utilized to compensate for temperature changes in an extruder caused by changes in the speed of the extruder screw.

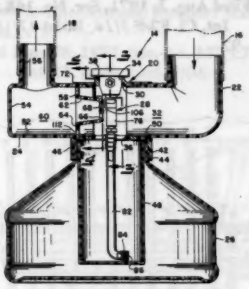
3,733,060

MIST GENERATOR

Marvin D. Merritt, Rebel Ranch, Venice Farms, Venice Avenue E., Box 988c, Venice, Fla.

Continuation of Ser. No. 11,943, Feb. 17, 1970, abandoned.
This application Apr. 10, 1972, Ser. No. 242,835
Int. Cl. B01f 3/04
U.S. Cl. 261—1 **6 Claims**

A generator is provided for producing a liquid aerosol mist of uniform dispersion characteristics that is circulated through an oxygen tent or the like. The generator includes a housing having a primary air passage therethrough which in an intermediate section is formed with an expanding venturi tube. A nebulizer is supported by the housing and functions to entrain a therapeutic liquid within a pressurized gas and subsequently to introduce the liquid-gas stream into the primary air passage upstream of the venturi tube. The expansion of the liquid-gas stream in the venturi creates a pressure differential in the passage to draw air through the same, whereby the liquid-gas stream uniformly is dispersed within the primary air stream.

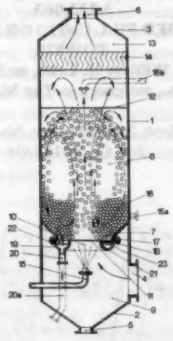


3,733,061

GAS-LIQUID CONTACT APPARATUS

Ole Kristian Bockman, Oslo, Norway, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Filed Oct. 26, 1970, Ser. No. 83,809
Claims priority, application Norway, Nov. 13, 1969, 4499
Int. Cl. B01f 3/04
U.S. Cl. 261—21 **11 Claims**



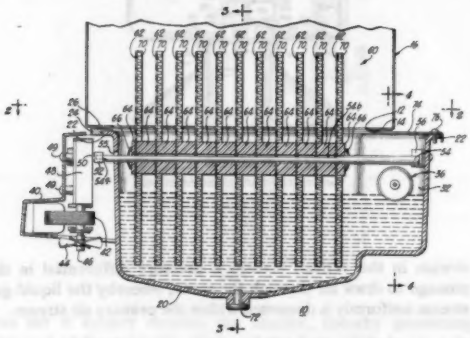
An apparatus for obtaining interphase contact between fluids, particularly gas and liquid, wherein a gas is caused to flow upwardly through a substantially vertical contact zone providing a so-called fluidized bed of contact bodies. The velocity of the gas entering the contact zone is held at a value at least to prevent discharge of the liquid upwardly from the contact zone and downwardly through the gas entrance. Means is provided to collect the liquid at a location close to the gas entrance and to drain off the liquid from the liquid-collecting means at a controlled rate whereby a portion of the collected liquid may be recirculated into the gas entering the contact zone. The collection means comprises an annular gutter at the bottom of the contact zOne and the gas entering the contact zone is injected through the center of the gutter along with a jet of fresh liquid issuing from a nozzle mounted centrally under the gutter.

3,733,062

HUMIDIFIER

Louis A. Bracich, Cary, Ill., assignor to Nu-Air Humidifier Corporation, Rosemont, Ill.

Filed Aug. 3, 1971, Ser. No. 168,546
Int. Cl. F24f 3/14; B01d 47/18
U.S. Cl. 261—92 7 Claims



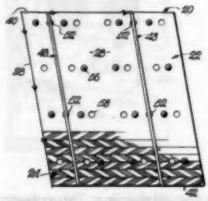
A humidifier for attachment to an air duct or plenum chamber including novel rotor means for introducing water into the air flow in the duct or plenum. The rotor includes a plurality of spaced apart circular disks formed of performated sheet material which are maintained in axially spaced apart relation on a rotor shaft by a series of annual spacer blocks. Water absorbption pads formed of open celled plastic material are secured to one side face of each of the disks for the purpose of picking up of water from a pan-like supply housing for delivery into moving the air flow in the duct.

3,733,063

CHEVRON RIBBED FILL UNIT FOR WATER COOLING TOWER

Charles E. Loetel; William H. Lebo, and Dougan L. Jones, all of Mission, Kans., assignors to The Marley Company, Kansas, Mo.

Filed Sept. 24, 1971, Ser. No. 183,471
Int. Cl. B01f 3/04
U.S. Cl. 261—112 19 Claims



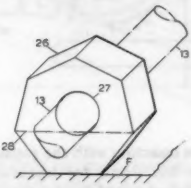
A thin, self-sustaining, corrugated plate of polyvinyl chloride is strengthened against bending along its lines of weakness by stiffening structure extending vertically of the plate within the thickness confines of the corrugations to minimize airflow impedance. One embodiment utilizes rovings of fiber glass strands saturated with polyester resin which are placed within troughs cut through the corrugations, the resin then hardening to stiffen the roving and bond it to the plate. A second embodiment has sets of side-by-side stiffening channels integrally formed into the body of the plate. A third embodiment employs a wood brace complementally received within each channel of a series of single stiffening channels to augment the strengthening properties of the channels and to support the plate when the braces are suspended from above or stood on a flat, underlying surface. A fourth embodiment uses a transversely U-shaped metal brace in place of the rectangular wood brace of the third embodiment.

3,733,064

MEANS FOR DIFFUSING GASES INTO LIQUIDS

Eric Sidney Branton, 5 Repton Avenue, Gidea Pk., Romford, England

Filed Nov. 10, 1970, Ser. No. 88,291
Claims priority, application Great Britain, Dec. 24, 1969, 62,972/69
Int. Cl. B01f 3/04
U.S. Cl. 261—122 6 Claims



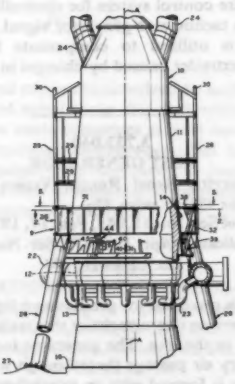
Means for supporting, levelling and/or retaining a pipe or pipe-work, especially of a gas diffuser system, comprises a block or body adapted to constitute a stand for the pipe or pipe-work and having a hole or recess in or through it for the pipe or pipe-work. The hole or recess is eccentric with respect to the peripheral configuration of the block or body so that, by adjusting or setting the block or body angularly about the axis of the pipe or pipe-work, the effective height of the stand can be varied. In a preferred embodiment of the invention a block, which constitutes the stand for the pipe or pipe-work, is of polygonal form and has five to nine sides. A particularly convenient material for the block or body is concrete.

3,733,065

FURNACE APPARATUS

Melvin J. Greaves, Cleveland, and Tage Werner, Rocky River, both of Ohio, assignors to Arthur G. McKee & Company, Cleveland, Ohio

Division of Ser. No. 811,527, March 28, 1969, Pat. No. 3,630,507, which is a continuation-in-part of Ser. No. 778,883, Aug. 29, 1968, Pat. No. 3,559,972, which is a division of Ser. No. 520,945, Jan. 17, 1966, Pat. No. 3,431,691. This application May 5, 1971, Ser. No. 140,577
Int. Cl. C21b 7/06
U.S. Cl. 266—43 8 Claims



Blast furnace apparatus having a shell that is lined with refractory material, and means for reinforcing the shell includ-

ing gussets secured to the outer surface of the shell and companion gussets fixed to the inside of the shell substantially in alignment with the first mentioned gussets. The companion gussets preferably have openings through them to inhibit overstressing of the companion gussets on expansion and contraction of the shell.

3,733,066

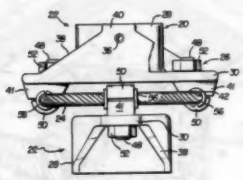
FLEXIBLE COUPLING

William E. Strain, 503 Shirley Drive, Birmingham, Mich.

Filed Sept. 21, 1971, Ser. No. 182,340

Int. Cl. F16f *15/10*

U.S. Cl. 267—148 **10 Claims**



A flexible coupling including a pair of generally coaxially aligned hub members, each hub secured to a circular cable to transmit radial forces. The hub members each have a pair of opposed radial arms and the cable is secured to the arms by clamps. The radius of the circular cable is preferably less than the length of the arms and the clamps are hook-shaped, with the shank portion of the hook parallel to the axis of the hubs, to secure the cable radially inwardly of the distal ends of the arms.

3,733,067

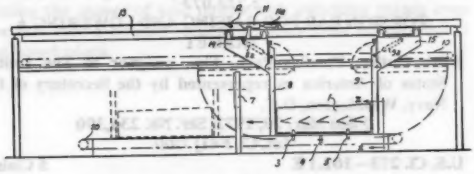
LOG ROTATING AND FEEDING DEVICE WITH CONTINUOUS SUPPORTING DEVICE

Bo Ingemar Ackerfeldt, 6612 Ascona, Switzerland, assignor to U. S. Natural Resources, Inc., Portland, Oreg.

Filed Nov. 24, 1971, Ser. No. 201,932

Int. Cl. B27b *29/08*

U.S. Cl. 269—295 **13 Claims**



A device for feeding logs through the saws of a sawmill or through other wood-processing machines includes a pair of log-holding arms supported on overhead carriages movable along a track extending parallel to the feeding line of the logs through the saws. A lower portion of each arm has a log end-gripping device that restrains the log against rotation and lateral movement with respect to the arm but permits limited vertical movement of the log while clamped between the two arms. Each such gripping device includes a plate provided with a spiked or other gripping surface. The plates are resiliently mounted on their arms in upwardly biased positions but move downwardly on the arms under the weight of a log to lower a gripped log onto a subjacent elongate support which supports the log as it is fed by the arms through the saws. In one embodiment the subjacent support is driven so as to help feed as well as support the log.

3,733,068

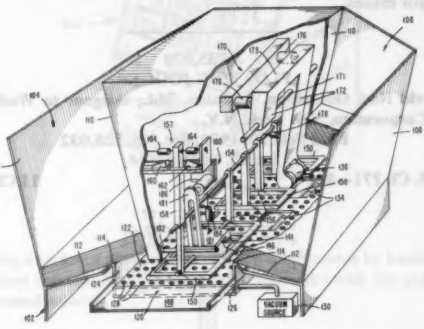
DUAL STACK TO COMMON PATH DOCUMENT FEED APPARATUS AND METHOD

George D. Herring, and Kenneth R. Reid, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1971, Ser. No. 157,137

Int. Cl. B65h *1/06, 3/08*

U.S. Cl. 271—9 **11 Claims**



A compact, dual-hopper document-handling mechanism selectively feeds documents from either hopper into a common path. The width of the system is reduced to less than three times the width of a document because each hopper overhangs one of the sides of a common cornering station so that the bottom document in each hopper overhangs the cornering station. A vacuum attracts the overhanging portion of the bottom document in each hopper towards the cornering station. A document support interposed between the documents and the cornering station bedplate prevents at least one of the document from resting on feed means below the overhanging portion of each hopper. One of the documents is selected by positioning the document support to permit the vacuum to draw the selected document downward to rest on the feed means. The feed means is actuated to feed the selected document into the cornering station from the hopper, while the other feed means is rendered inoperative. A transport means then delivers the document from the cornering station into the common path.

3,733,069

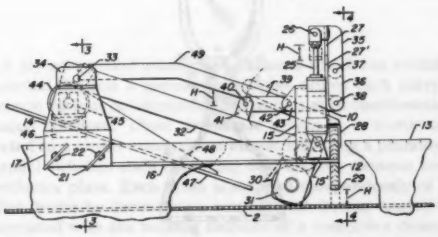
AUTOMATIC GATE MEANS FOR HANDLING THIN VENEER-TYPE SHEETS

Royal C. Cady, Melen, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 20, 1971, Ser. No. 145,353

Int. Cl. B65g *47/26*; B65h *9/14*

U.S. Cl. 271—50 **8 Claims**



An automatic gate means for mounting over a conveyor means provides for the collecting and aligning of the move-

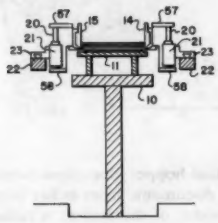
ment of side-by-side pieces of thin veneer-type materials, such as thin wood veneers from a veneer dryer. The lifting and lowering of the gate means over the conveyor belt is operated responsive to the feed means to the conveyor means, or to the dryer, such that the gate lifting awaits the alignment of a full-width charge of a plurality of pieces on the conveyor. A preferred design and operation incorporates a "dead" roller which lifts and lowers opposite to the movement of the gate so as to insure the positive and rapid movement of veneer pieces from the conveyor, particularly from an upwardly sloping conveyor means.

3,733,070

FLOATING JOGGER

David Noel Obenshain, Swanton, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,032
Int. Cl. B65h *31/34*
U.S. Cl. 271—89 11 Claims



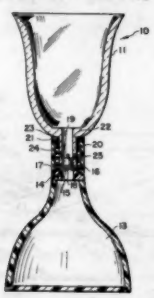
A paper jogging device is presented for stacking sheets of paper or the like into precise alignment as the sheets are piled directly onto a shipping skid. The device comprises an oscillating paddle, arranged in substantially a vertical plane, that is pivoted at its bottom edge through a flexible hinge element to a more-or-less horizontally disposed hinge plate. The hinge plate rests on and stays in contact with the shipping skid during the initial stages of the stacking operation, and the entire device is mounted so as to float downward with the shipping skid as the stacking operation continues and until the stack reaches a height that is near the top of the oscillating paddle. When the jogging device reaches the level of its lowest downward movement, jogging action continues as the stack increases in height and the shipping skid continues to move downward.

3,733,071

CUP HAVING ILLUSION OF EMPTYING CONTENTS

Maxine G. Levin, Westhill Drive, Gates Mills, Ohio

Filed Aug. 17, 1972, Ser. No. 281,468
Int. Cl. A63j *5/00*; A47g *33/00*
U.S. Cl. 272—8 R 12 Claims



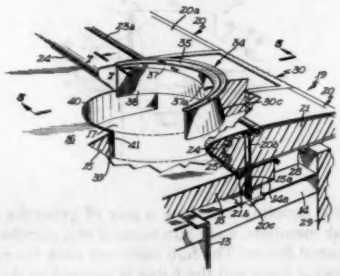
A novelty cup having a transparent upper section for holding liquid contents and an opaque hollow base which is connected to the upper section through a flow passageway normally blocked by a valve. By unobtrusive manipulation of the upper portion relative to the base, the valve is opened to permit gravity flow of the fluid from the transparent section to the reservoir in the base to create the illusion that the upper portion is being emptied of its contents.

3,733,072

POOL TABLE WITH REMOVABLE POCKET AND RAIL STRUCTURE

Otto Sevenen Nielsen, 4875 N. Sorell Avenue, North, Minneapolis, Minn.

Filed Aug. 26, 1970, Ser. No. 70,628
Int. Cl. A63d *15/00*
U.S. Cl. 273—7 9 Claims



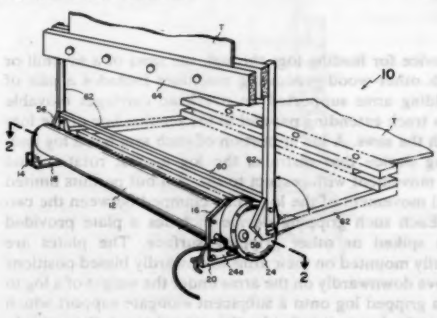
A pool table comprises a table top having a bed provided with side and corner pocket recesses therein. A rail and bumper structure which is secured to the pool table frame is mounted on the bed and includes a plurality of elongate rail and bumper members interconnected together by side and corner connecting members. The side and corner connecting members are provided with male socket elements which are insertable into female sockets in the rail and bumper members. Each side and corner connecting member has a deflector member thereon to facilitate deflection of a pool ball into a pocket. Each concave surface of the bed which defines a pocket recess is provided with an impact member, preferably formed of plastic, to minimize damage to the cover during rebounding of a ball prior to the ball dropping into a pocket.

3,733,073

TORSION BAR FOR RAISING AND LOWERING A TARGET

Keith Gutler, Pinellas Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1972, Ser. No. 236,390
Int. Cl. F41j *7/00*
U.S. Cl. 273—102.1 E 5 Claims



A target raising and lowering mechanism employs a torque tube and torsion bar combination to provide weatherproof

housing for its electric motor and reduction gear means while also storing energy in the torsion bar during lowering of a target for later use during raising of the target.

3,733,074

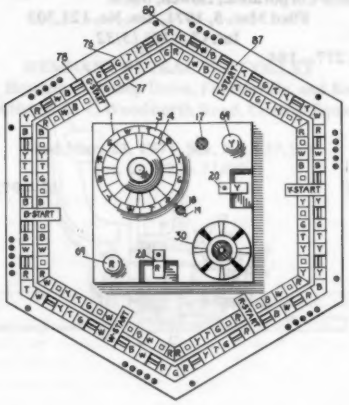
BOARD GAME APPARATUS

Vincent A. Daley, 189 Second Avenue, Massapequa Park, N.Y.

Filed Feb. 23, 1971, Ser. No. 118,139

Int. Cl. A63f 3/00

U.S. Cl. 273—134 A **3 Claims**



A game apparatus comprising an equilateral, hexagonal gameboard having a plurality of insignia, color designated, and power rail exposing aperture spaces, color designated pawns with switching means operable via said apertures, a primary spinner having numeral, insignia, and color indicia thereon, adjustably supporting thereunder a contactor which sequentially engages drycell powered circuit means, conditioning for energization a plunger activated, secondary spinner with related dial indicia and a pawn activated plurality or indicator lamps, which signal use of related instruction cards, providing thereby a plurality of diverse means determining the moves of said pawns with switching means over two continuous courses located inwardly from and parallel to the board edges.

3,733,075

DEVICE FOR DISPLAYING RANDOMLY SELECTED SYMBOL COMBINATIONS AND RANDOMLY OPERATIVE PLAYER OPERATED SYMBOL CHANGING MEANS THEREFOR

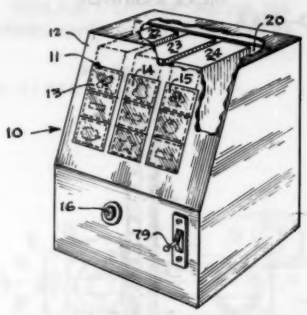
Donald E. Hooker, Wilmette, and Walter M. Burnside, Waukegan, both of Ill., assignors to Waukegan Electronics, Waukegan, Ill.

Filed May 7, 1970, Ser. No. 35,533

Int. Cl. A63f 5/04

U.S. Cl. 273—141 A **1 Claim**

An amusement game device of the slot machine type comprising rotating drums or electro-optical reels which form a combination of symbols at the end of a play cycle having a specified play value and which includes player activated means for changing at least one of the symbols of the combination to form a new combination which can have increased play value, thereby increasing the player participation in the game. The player activated means is preferably made operative for changing a symbol of a combination only at random



during a series of successive plays of the apparatus by having a random selector means operatively associated with the player activated means.

3,733,076

ELECTRICALLY OPERATED, MANUALLY ACTUATED, MOTOR DRIVEN ROTATABLE DRUM CHANCE DEVICE

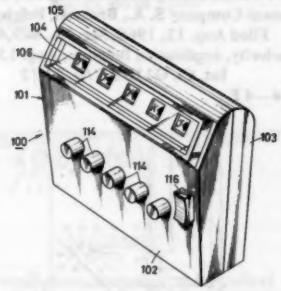
Haruo Ohki, Katsushika-ku, Tokyo, Japan, assignor to Yoshie Ito, Tokyo, Japan, a part interest

Filed Aug. 12, 1971, Ser. No. 171,194

Claims priority, application Japan, Sept. 18, 1970, 45/92035

Int. Cl. A63f 5/04

U.S. Cl. 273—143 R **6 Claims**



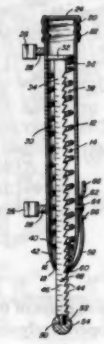
A toy amusement machine is disclosed which has rotatably mounted thereon a plurality of display drums each carrying thereon various combinations of symbols at circumferentially spaced positions. These drums are driven by a motor connected to a motor energization circuit including a plurality of parallel switches each consisting of a braking element and a conductor plate. Each drum is stopped independently of the other drums by depressing a control push button operatively associated with the braking element of a respective drum. A release push button is depressed to disengage the braking element from each drum and close the motor circuit to cause all drums to rotate simultaneously.

3,733,077

GOLF CLUB ATTACHMENT FOR DETERMINING OPTIMUM CLUB HEAD WEIGHT

Marcus W. Fennell, 10201 Morehart Avenue, Pacoima, Calif.

Filed May 26, 1972, Ser. No. 257,288
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 A **6 Claims**



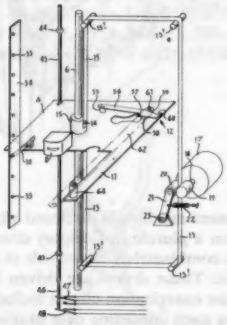
An accelerometer for attachment to the shaft of a conventional-type golf club and which when in use occupies a position adjacent the head of the club. The device includes a spring loaded rod mounted for retractable movement within a housing. The rod has teeth along one longitudinal edge to provide a rack and an indicia speed measuring scale along a diametrically opposite longitudinal edge. A latching and ratcheting pawl is mounted on the housing and is operatively coordinated with the teeth of the rack. The end of the rod which projects outward of the housing is provided with a detachable weight which enables the user to determine the proper weight needed in the head of the club to achieve maximum club head speed.

3,733,078

APPARATUS FOR PLAYING MULTIPLE TAPE CARTRIDGES

Marcel Jules Helene Staar, Brussels, Belgium, assignor to Staar Development Company S. A., Brussels, Belgium

Filed Aug. 12, 1969, Ser. No. 849,484
Claims priority, application Belgium, Aug. 13, 1968, 62195
Int. Cl. G11b *21/10, 23/12*
U.S. Cl. 274—4 F **7 Claims**



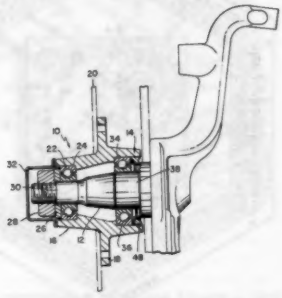
An apparatus for playing a number of self-contained cartridges of magnetic recording tape in sequence or a selected order. The cartridges are loaded in a stationary frame, and a moving slide is driven in a scanning movement past the stack of cartridges in the frame. The slide bears the playback head and cartridge moving elements and is adapted to stop adjacent each or a selected cartridge, to engage the cartridge with the moving elements and move it into engagement with the playback head and a tape capstan to play sound recordings on the tape. A full cycle of operation is provided in which the slide is returned to a position adjacent the first cartridge in the stack after all loaded in the frame have been played in sequence.

3,733,079

SEAL ASSEMBLY

Henry A. Haigh, Howell, Mich., assignor to Haigh Plastics Products Corporation, Howell, Mich.

Filed Mar. 5, 1971, Ser. No. 121,303
Int. Cl. F16j *15/32*
U.S. Cl. 277—184 **2 Claims**



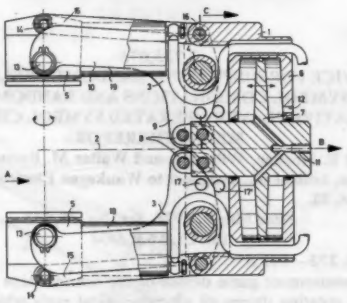
A seal assembly for a front wheel inner bearing comprising a flat ring of elastomeric material and an annular plastic rim or housing molded on the outer edge portion of the ring and adapted to fit within the wheel hub at the inner end thereof.

3,733,080

SWIVEL CHUCK

Willy Zeidler, 8729 Hofheim, Germany, assignor to HEWA-HESSISCHER Werkzeug-und Apparatebau Alfred Vogler, Pfaffenwiesbach, Germany

Filed Aug. 4, 1971, Ser. No. 169,023
Claims priority, application Germany, Aug. 4, 1970, P 20 38 574.4
Int. Cl. B23b *31/18, 31/34, 31/30*
U.S. Cl. 279—4 **10 Claims**



A swivel chuck in which a body is rotatable about a first axis and has two bell cranks pivoted thereto about the second axes perpendicular to the first, shorter arms of the bell cranks being

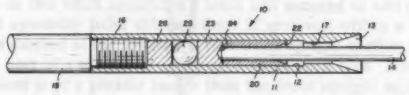
acted upon by a hydraulic member movable parallel to the first axis, to pivot the bell cranks, the longer arms of which carry at their free ends jaws which are rotatable about a third axis perpendicular to the first and second axes. Links pivoted to the jaws and the body form a parallelogram linkage to maintain the orientation of the jaws. Three pistons, movable in cylinders carried by the longer arms, have shoes connected thereto which abut rollers, arranged in pairs in grooves in an actuating member connected to each jaw, the rollers of a pair being at 180° to one another, while the rollers in adjacent grooves are at 60° to one another, with respect to the third axis. Movement of a selected one of the pistons will thus rotate the actuating member and associated jaw.

3,733,081

REMNANT RETRACTOR COLLET

Robert J. Hesslein, 3 Bishop Drive, Fayetteville, and Robert W. Chamberlin, R.D. 1, Woodworth Road, Central Square, both of N.Y.

Filed Mar. 23, 1971, Ser. No. 127,151
Int. Cl. B23b *31/00*
U.S. Cl. 279—46 **9 Claims**



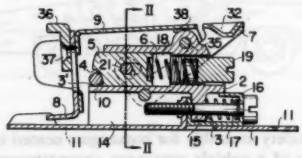
An improved retractor collet fastens to a pusher rod in a bar machine and retracts the remnant end of a consumed bar. The collet includes a fixed sleeve with an axial bore and an open end for receiving the bar, and a rotatable gripper is housed within the sleeve ahead of a thrust bearing. The gripper is sized to receive and grip the bar and is freely rotatable within the sleeve as the bar is machined. The gripper holds the remnant end of the bar when the collet is retracted to remove the remnant from the machine.

3,733,082

SKI BOOT HEEL BINDING

Masahiro Murata, Shizuoka, and Michio Iizuka, Tokyo, both of Japan, assignors to Hope Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1971, Ser. No. 142,178
Claims priority, application Japan, May 16, 1970, 45/42003
Int. Cl. A03c *9/00*
U.S. Cl. 280—11.35 T **7 Claims**



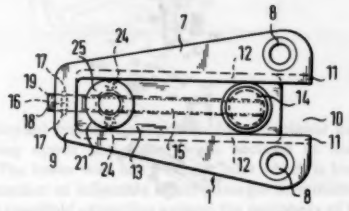
A casing having a boot heel engaging means at its front end is pivoted to a connecting member which is mounted on a base. The connecting member comprises a transverse horizontal plane at its front end and a longitudinal bore which lower end is on the same level as the horizontal plane. Within the longitudinal bore a locking member is provided to be urged forwards which has at its front surface a dented portion to engage with a horizontal pin secured to the casing in the boot heel engaging position.

3,733,083

SETTING MEANS FOR USE WITH SAFETY SKI BINDINGS

Ludwig Berchtold, 8033 Krailling, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed July 7, 1971, Ser. No. 160,355
Claims priority, application Germany, July 28, 1970, P 20 37 452.1
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 R **7 Claims**



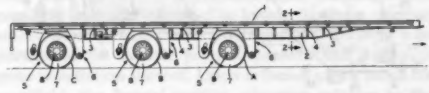
The setting means serve to adjust a binding element on a ski in the longitudinal direction thereof. The binding element comprises a slidable plate, which is guided on a baseplate fixed to the ski and is movable relative to the baseplate by means of a power screw. The nut cooperating with the power screw is provided with a series of half-threads and is held on the screw to be adjustable at least to such an extent in the direction of the mid-perpendicular on the chord which connects the ends of the series of half-threads that the nut can be disengaged from the threads of the power screw.

3,733,084

TRAILER CONSTRUCTION

Robert J. Mauck, 2252 Pinconning Road, Pinconning, Mich.

Filed Dec. 9, 1971, Ser. No. 206,254
Int. Cl. B62d *53/00*
U.S. Cl. 280—81.5 **9 Claims**



A trailer construction including three wheel assemblies each comprising two independent sets of wheels. Each independent set of wheels is pivotally connected to the trailer bed and the two independent sets of wheels in each wheel assembly are connected together by links so as to operate in unison. Lock means is provided for optionally locking the individual sets of wheels of the central wheel assembly only, in a straight path, while the trailer is moving forward. Floating wheels are provided at the pivot points of the sets of wheels and lock means is provided for optionally locking certain of said floating wheels to the auxiliary frames of the corresponding wheel sets. Said certain floating wheels are connected together to rotate in unison. Air cylinders are controlled by the tractor operator for simultaneously moving all three wheel assemblies in the same direction for steering the trailer when it is moved in reverse.

3,733,085
SKI BOOT TOE FIXTURE

Tokutaro Iizuka, Sashigaya, Setagaya-ku, Tokyo, and Yoshinari Mochizuki, Itabashi-ku, Tokyo, both of Japan, assignors to Hope Kabushiki Kaisha, Tokyo, Japan

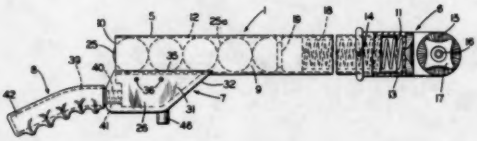
Filed Nov. 27, 1970, Ser. No. 93,232
Claims priority, application Japan, Nov. 28, 1969, 44/95064; Nov. 28, 1969, 44/95065; Feb. 10, 1970, 45/11633
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 3 Claims

A ski boot toe fixture comprises a base adapted to be fixed on the upper surface of a ski, a turntable member holding a ski boot toe, and a press connecting means connecting the base and the turntable member by resilient pressure. The turnable member is arranged on the base to turn relative to the base around a vertical pin. The ratio of the space between the vertical pin and the press connecting means to the space between the boot toe and the vertical pin is adjustable by an adjusting means which adjusts the force by which the boot toe is released.

3,733,086
GOLF CART BALL DISPENSING HANDLE CONSTRUCTION

Loy P. Walkerow, P.O. Box 67, Nashville, Ohio

Filed July 26, 1971, Ser. No. 166,026
Int. Cl. B62b 5/06, 11/00
U.S. Cl. 280—47.17 5 Claims

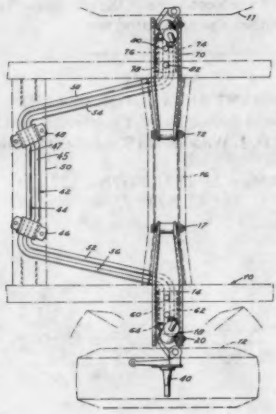


A handle construction for attachment to a usual golf cart having a ball dispensing mechanism mounted thereon. A spring biased plunger is located within a tube and moves golf balls stored within the tube out through an open end of the tube. A stop rod and an actuator button are pivotally mounted, each on opposite ends of a pivotally mounted cam. A spring biased retainer rod engages the cam holding it in an at rest position which extends the stop rod into the open tube end blocking movement of balls through the open end. Depression of the actuator button pivots the cam and simultaneously retracts the stop rod from the open tube end dispensing the outermost stored golf ball, and projects the retainer rod into the tube preventing ejection of the remaining balls until the actuator button is released, whereby the stop rod again blocks the open tube end.

3,733,087
INDEPENDENT SUSPENSION SYSTEM FOR A MOTOR VEHICLE

William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1970, Ser. No. 100,114
Int. Cl. B62d 7/08
U.S. Cl. 280—96.2 R 8 Claims

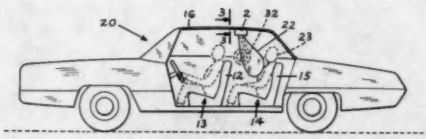


An independent suspension system for a motor vehicle having left and right wheels each positioned laterally by a suspension arm and guided vertically by a telescopic strut. A plurality of torsion springs interconnects the left and right suspension arms and is constructed to function as the main suspension spring, as an anti-roll stabilizer and as the struts positioning the suspension arms longitudinally in the vehicle.

3,733,088
VEHICLE PASSENGER RESTRAINT SYSTEM

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 9, 1971, Ser. No. 132,856
Int. Cl. B60r 21/02
U.S. Cl. 280—150 AB 2 Claims



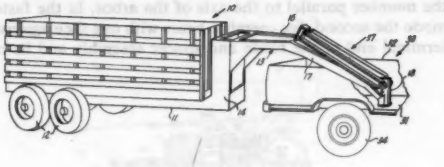
A vehicle safety assembly for passengers seated in the rear seat assembly of a vehicle passenger compartment. The assembly includes an inflatable bag which is stored in a non-inflated condition above and behind the front seat of the vehicle for limiting forward movement of the rear seat assembly passengers. The assembly includes gas generating means disposed along the roof rail of the vehicle in communication with manifold means disposed across the roof of the vehicle above the rear seat assembly. In turn, the manifold means is in communication with the inflatable bag which is disposed about the manifold in a coil-like fashion. Upon impact or collision of the vehicle the gas generating means is triggered with the resultant inflation of the inflatable gas bag.

3,733,089

HITCH ATTACHMENT TO CONVERT A TRAILER-VEHICLE HITCH APPARATUS TO A TRAILER-FARM TRACTOR HITCH APPARATUS

Earl E. Goecke, and Ronald D. Goecke, both of State Center, Iowa

Filed Jan. 17, 1972, Ser. No. 218,172
Int. Cl. E62d 53/00; B62d 53/08
U.S. Cl. 280—415 A 6 Claims



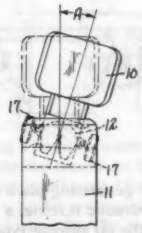
The hitch attachment is adapted for use with a type of hitch apparatus now in general use for connecting the tongue of a stock trailer or the like with the floor of the box of a pickup truck. In this hitch apparatus a hitch ball secured to and projected upwardly from the box floor is received within a ball socket carried at the lower end of a front upright section that forms part of a tongue structure of a gooseneck type. The attachment is of a greater length than the front upright section and is pivoted at one end to the top of the upright section for swinging movement to a first storage position extended rearwardly from the top of the upright section for support on the upper side of the tongue structure and to a second working position projected longitudinally of and downwardly from the upright section. In this second position a hitch ball on the attachment is received in locked engagement within the ball socket on the upright section and a clevis at the lower end of the attachment is connectible with the draw bar of a farm tractor.

3,733,090

ANTI-JACKKNIFING ASSEMBLY

Anthony T. Keller, 10 Hilton Drive, West Haven, Conn.

Filed Apr. 9, 1971, Ser. No. 132,794
Int. Cl. B62d 53/08
U.S. Cl. 280—432 6 Claims



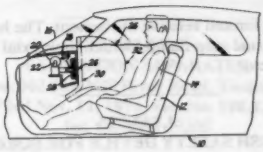
This disclosure relates to apparatus for use in combination with a towing vehicle and a towed vehicle pivotally connected in tandem thereto. Carried on the so-called fifth wheel of the towing or tractor are retractable members which may be extended into a position in which they will engage stopping blocks defined in opposite ends of arcuate paths defined on the towed vehicle or trailer.

3,733,091

OCCUPANT RESTRAINT CUSHION

Lawrence L. Fleck, Warren; Robert Hickling, Royal Oak, and Thomas J. Smalldon, Port Huron, all of Mich., assignors to General Electric Corporation, Detroit, Mich.

Filed May 12, 1971, Ser. No. 142,537
Int. Cl. B60r 21/10
U.S. Cl. 280—150 AB 12 Claims



An occupant restraint cushion includes a planar base portion having upper and lower walls secured at the edges thereof. The lower wall has a center inlet which is located at the intersection of inflatable linear passages terminating at an inflatable manifold extending around the periphery of the base portion. The passages and the manifold are formed by triangular portions of the upper and lower walls which are secured to each other in surface-to-surface relationship and provided with apertures. The cushion further includes a frontal portion which extends across the base portion and is secured at opposite edge portions thereof to opposite edges of the base portion. The frontal portion includes a number of adjacent interconnected inflatable tubes. Each tube communicates at the ends thereof with the manifold through openings in the upper wall of the base portion. Apertured intermediate and outer end walls extend between the tubes and the base portion to define ambient air chambers. The apertures of the walls and of the triangular portions are covered by porous material permitting passage of ambient air therethrough. The apertures of the triangular portions and of the base portions and of the outer end walls are further provided with flap-type valves which easily permit the ingress of ambient air into the ambient air chambers but permit only limited egress of the ambient air from the chambers upon pressurization thereof. The base portion is mounted on a vehicle body with the inlet communicating with a source of pressure fluid. In stored position, halves of the base portion and like portions of the frontal portion are respectively rolled upon themselves, or spaced edge portions of the base portion and of the frontal portion are folded upon themselves over a center portion. Upon communication of the inlet with the source of pressure fluid, the fluid inflates the passages and the manifold to move the base portion from stored position to a planar operative position over a backing portion of the vehicle body to preform the frontal portion prior to inflation thereof. Upon inflation of the tubes from the manifold, the frontal portion advances relative to the base portion to operative position. As the frontal portion advances, ambient air is drawn into the cushion through the apertures in the base portion and in the outer end walls.

3,733,092

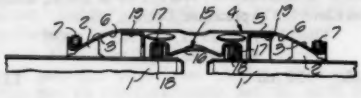
CONDUIT RESTRAINING AND SEALING CONNECTOR

Roy E. Yorke, Granada Hills, and Stephen N. Affa, Torrance, both of Calif., assignors to General Connectors Corporation, Burbank, Calif.

Filed Oct. 29, 1970, Ser. No. 84,973
Int. Cl. F16l 27/04
U.S. Cl. 285—166 4 Claims

A restraining means including a pair of journal rings secured to a pair of confronting conduits and having spherical outer surfaces, and a connecting shell having mating end portions to permit limited relative movement of the conduits; the connecting shell being longitudinally split into hinge connected

complementary parts and one hinge being separable. The housing encloses a seal connector also joining the conduits



and permitting limited relative movement. The housing is provided with internal stop flanges which limit axial movement of the seal connector.

3,733,093

PULL AND PUSH SAFETY DEVICE FOR SCREW SOCKET CONNECTIONS OF PIPES

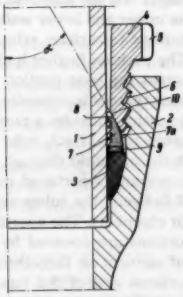
Georg Seiler, Pachmayrplatz 11, Munich, Germany

Filed May 20, 1971, Ser. No. 145,327

Claims priority, application Germany, Mar. 10, 1971, P 21 11 568.4

Int. Cl. F16l *21/06*

U.S. Cl. 285—342 **5 Claims**



The invention relates to a pull and push safety for screw socket connections of pipes, in particular malleable iron pipes, plastic pipes and large diameter pipes, such as for supply networks in cities or the like. In such pipes there is disposed in an annular chamber limited by the plane ends of the pipe and the socket equipped with an internal thread a sealing ring which is sealingly preloaded by a pressure ring screwable into the socket.

In such screw socket connections there may occur at the installed pipes extraneously acting pulling forces or pushing forces caused by the internal pressure, tending to loosen the connection between the pipe sections. The sealing rings are able to absorb these forces, which can assume a considerable magnitude, to a limited extent only. Therefore, attempts have already been made to secure such connections against pushing and pulling forces. These known measures are costly, however, because they make necessary special machining operations at the pipe ends, which often can be performed only at the construction site. In addition, the machining of the pipe surfaces, such as cutting in a clamping groove, will weaken the pipe wall which may lead to the premature breakage of the pipe.

3,733,094

FASTENER DEVICE FOR SAW ARBOR

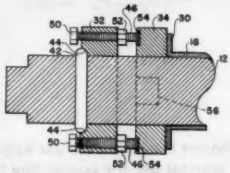
James J. Emter, 1204 N.W. 53rd Street, Vancouver, Wash.

Filed Mar. 29, 1971, Ser. No. 129,047

Int. Cl. F16d *1/06*; B27b *5/32*

U.S. Cl. 287—53 R **8 Claims**

A bind-free, bidirectional non-releasing fastener, for an arbor shaft carrying an assembly of circular saw blades and spacers, for securing the blade and spacer assembly against axial movement in operation yet permitting ready unfastening and refastening for repair, replacement and resetting of the saws on the arbor. The fastener comprises two disc portions, both of annular configuration and fitting loosely over an end of the arbor shaft, cooperating with a pin passing through a diametric hole formed in the arbor shaft. The first of the annular discs contains a pair of aligned radial grooves on the outside face thereof for receiving and locking the projecting ends of the pin. This first member is also provided with a plurality of adjustable threaded bolts extending transversely through the member parallel to the axis of the arbor. In the fastened mode the second disc member bears with one face against the terminal end of the blade and spacer assembly and its other



face is held in spaced rigid relationship to the axially-pinned first disc member by means of the threaded bolts. To release the fastener device, the threaded bolts are loosened by turning in the reverse direction to remove the bearing pressure on the second disc member and permit it to be rotated relative to the first disc member until the bolts are opposed to depressions formed in the face of the second member. This rotational position permits the first disc member to be moved closer inward toward the second disc member, thus freeing the pin from the grooves securing it against movement, and thereby allowing the pin to be withdrawn from the arbor shaft. Thereupon the first and second disc members can then be slid axially off of the arbor, permitting the assembly of saw blades and spacers to be slid off the arbor.

3,733,095

ELECTRICAL POWER GENERATING PLANT

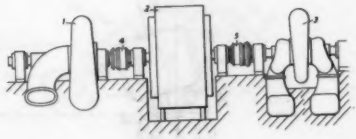
Harold Sinclair, London, and Herbert Arthur Clements, Weybridge, both of England, assignors to S.S.S. Patents Limited, London, England

Filed Oct. 1, 1971, Ser. No. 185,558

Claims priority, application Great Britain, Feb. 5, 1971, 4,059/71; Oct. 1, 1970, 46,736/70

Int. Cl. H02k *7/18*

U.S. Cl. 290—52 **5 Claims**



In electrical power generating plant of the pumped storage type comprising a hydraulic turbine, a motor/generator and a storage pump, or of the air storage type comprising a gas turbine, a motor/generator and an air compressor, the times of change-over between the generating mode and the pumping or compressing mode are shortened by providing, between the motor/generator and the pump or compressor a synchronous self-shifting clutch with lock arranged for overrunning when the motor/generator rotates in its normal direction of rotation relative to the pump or air compressor and for engagement when the motor/generator tends to rotate in the reverse direction relative to the pump or the air compressor.

3,733,096

BUMPER DEVICE

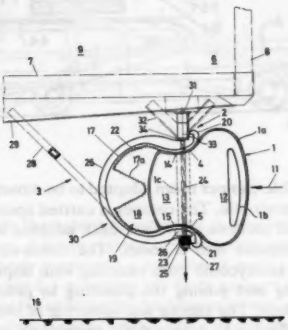
Karl Kassbohrer, Ulm/Donau, Germany, assignor to Karl Kassbohrer Fahrzeugwerke GmbH, Ulm/Donau, Germany

Filed Mar. 15, 1971, Ser. No. 124,408

Claims priority, application Germany, Mar. 13, 1970, P 20 12 033.6

Int. Cl. B60r *19/10*

U.S. Cl. 293—63 19 Claims



An energy absorbing, or bumper, device, particularly for vehicles and especially to resist under-running by smaller vehicles of larger vehicles, as trucks, having a substantial overhang. An impact member has an impact receiving surface and an oppositely facing angular surface. A support holds the impact member in a suitable position and so bears against the angular surface in such a manner as to resist with a progressively increasing force movement of the impact member in response to impact. Springs, compression resistant materials and other means, including progressively collapsible structural means, can be added to the support device for further progressively resisting movement of the impact member.

3,733,097

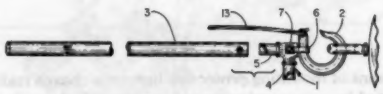
DEVICE FOR ATTACHING A HOOK TO A SPACED OBJECT

Aaron J. Hank, Jr., 3743 Devon Drive, SE, Warren, Ohio

Filed Apr. 21, 1971, Ser. No. 135,899

Int. Cl. A47f *13/06*

U.S. Cl. 294—19 R 5 Claims



A device for attaching a hook to a spaced object, such as a crane, electrical transmission means, or industrial equipment. The device, however, is primarily used for mooring a boat into a dock or loading it on a trailer and consists of a head, a hook secured to the head, and a handle. The head has a pair of arms spaced at an angle to each other, each having an arcuate-shaped groove therein and a long tubular handle is provided having a projection thereon which may be inserted in the groove in either arm and when the handle is rotated it is secured to that arm. Two arms are provided which enables the hook to engage the object to be moved when the hook is in the correct position. If desired two grooves may be formed in each arm which are inclined in different directions relative to each other so that the handle may be attached to either arm, irrespective of its direction or rotation. The hook has a pointed end to engage the object to be moved and a shank portion to which a rope or cable is attached. When the hook portion engages the object to be moved, such as the eye of a boat, the handle is then removed by rotating it in a direction opposite to that to which it was applied, and the object to be displaced is moved to the desired position by a rope or cable attached to the shank of the hook. When the object is a boat, it may be moored into a dock or it may be mounted on a trailer having a winch upon which the rope or cable may be wound.

3,733,098

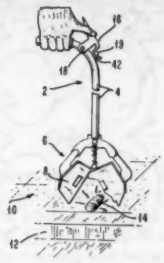
SANITATION APPARATUS

Emil A. Tobias, 362 Saw Mill River Road, Yonkers, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,125

Int. Cl. A47f *13/06*

U.S. Cl. 294—19 R 11 Claims



Apparatus for the collection and disposal of solid animal excrement is disclosed. The apparatus consists of a cane-like handle at the bottom of which a pair of jaws which are biased to the open position are located. A hand-operated actuator at the top of the handle is connected to the jaws by a rod or cable for closing the jaws. A disposable cardboard container is releasably held open in the open jaws by magnetic means on the jaws in cooperation with metal strips on the walls of the container. When the jaws close, the container is closed and locked in the closed position by a tab latching mechanism. When the jaws are subsequently opened, the closed container is released from the jaws.

Solid animal excrement can be collected and disposed of without the user having to touch the disposable container containing the excrement.

3,733,099

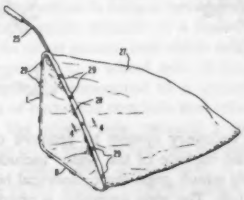
HOLDER AND MANIPULATOR FOR REFUSE BAGS

Frank Szita, 12919 Grenoble Drive, Rockville, Md.

Filed Apr. 27, 1971, Ser. No. 137,786

Int. Cl. A47f *13/06*

U.S. Cl. 294—55 20 Claims



A holder and manipulator for flexible refuse bags features an adjustable triangular frame and convenient means for attaching the frame to the mouth of a bag to support the mouth wide open. The frame carries a handle extension for manipu-

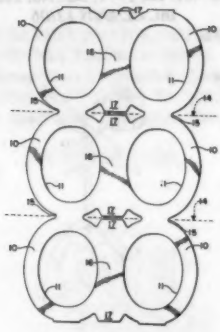
lating the holder and for supporting the same on the ground when desirable. The triangular frame enables the user of the bag holder to manipulate the same without stooping and a wide straight edge portion of the frame may be held on the ground to greatly facilitate sweeping debris into the bag.

3,733,100

CONTAINER CARRIER STOCK

John Tanzer, Brookfield, Wis., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 5, 1971, Ser. No. 140,405
Int. Cl. B65d 71/00
U.S. Cl. 294—87.2 **2 Claims**



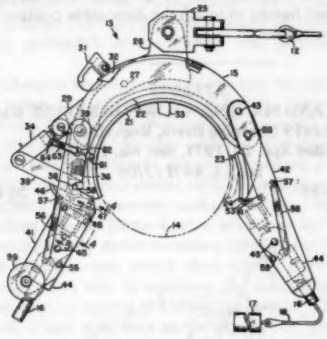
Strip stock of container carriers primarily for machine application to a selected number of pairs of containers wherein the stock is capable of being severed at any longitudinal position between container encircling bands to provide unitary packages of different selected numbers of pairs of containers.

3,733,101

HELO RECOVERY SYSTEM TONGS

Jack L. Sayre, Jr., Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1972, Ser. No. 234,762
Int. Cl. B66c 1/62
U.S. Cl. 294—104 **10 Claims**



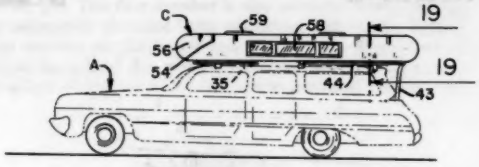
An aerial recovery system to retrieve cylindrical objects floating on the surface of the water includes a spring biased tong assembly which grips the cylindrical body when lowered from an aircraft. The tong assembly is characterized by guide legs which center the tong assembly over the object to be recovered. A retraction mechanism is also provided to retract the guide legs once the object has been gripped. Additionally, automatic release means are incorporated in the tongs to release the recovered object when it is lowered to a deck of a ship.

3,733,102

AUTOMOBILE CAMPERS

Andrew Serino, Denver, and Joseph A. Cwik, Arvada, both of Colo., assignors to Andrew Serino, Denver and Joseph A. Cwik, Arvada, both of Colo.

Filed Jan. 15, 1971, Ser. No. 106,789
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC **7 Claims**



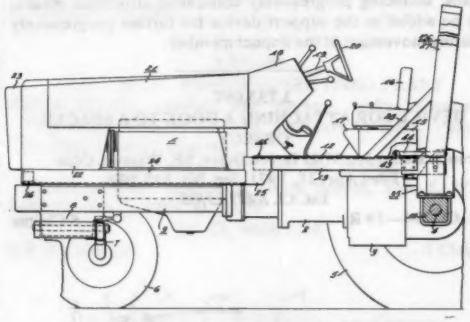
A collapsible camper room adapted to be mounted upon the top of an automobile. The camper is carried upon a deck with a nest of wall sections above the deck adapted to extend upwardly to expand into a room. The construction is of a lightweight, honeycomb core paneling with improved modes of fabricating and joining the paneling to produce a rigid, lightweight unit. The raising and lowering of the nested wall sections is effected by corner posts operatively interlocked to raise and lower in unison.

3,733,103

MOUNTING OF PROTECTIVE BARS ON MAIN FRAME

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 18, 1971, Ser. No. 144,419
Int. Cl. B62d 27/04
U.S. Cl. 296—35 R **12 Claims**



A means of mounting protective bars on a chassis resiliently supported by a suspension system on the vehicle main frame and a lost motion device which permits limited movement between the protective bars and the main frame until the protective bars firmly engage the main frame to provide a protective device in event of vehicle upset.

3,733,104

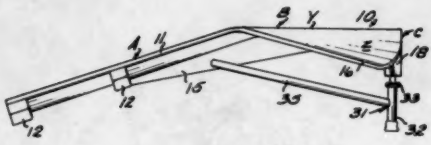
MULTIPLE USE BODY SUPPORT

Michael N. Carstensen, 3766 Pin Oak Circle, Doraville, Ga.

Continuation-in-part of Ser. No. 733,500, May 31, 1968. This application July 6, 1971, Ser. No. 159,932
Int. Cl. B47c 4/02; A61g 7/10
U.S. Cl. 297—377 **9 Claims**

A contoured body support defining a first support surface for supporting the trunk of a person, a second support surface for supporting the head of the person extending from one end

of the first support surface at an angle thereto; and a pair of third support surfaces on each side of the second support surface and extending from one end of the first support surface at a greater angle with respect to the first support surface than the angle of the second support surface with respect to the first support surface for supporting the arms of the person and leaving a sufficient area to support a substantial portion of the person's forearms. A support platform is adjustably mounted on the body support at the first support surface and is selectively movable therealong to support a person in the seated or prone position. A support stand is provided for selectively supporting the body support at a convenient angle. A swing support is provided for mounting the body support as a swing. A support frame for utilizing the body support as a walker is provided and includes caster wheels and a means for maintaining the person in a position so that his trunk rests on the first support surface while allowing his feet to contact the floor for propulsion.



3,733,105

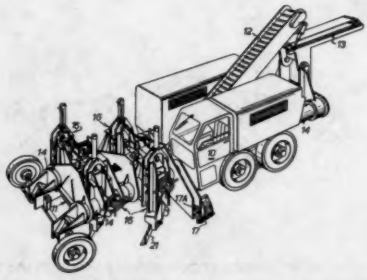
ROAD SURFACING APPARATUS

Leonard J. Housego, 134, Craddocks Avenue, Ashtead, Surrey, England

Continuation of Ser. No. 11,146, Feb. 13, 1970. This application Nov. 16, 1971, Ser. No. 199,324

Int. Cl. E01c *23/09*

U.S. Cl. 299—37 8 Claims



The obliquely disposed cutters of a road surface planing machine are caused to vibrate during the planing operation, so that the cutting edge of the blade is alternatingly advanced and retracted, to provide a percussive stone-splitting action and thereby produce a more accurate and smoother planed surface.

Camber changes are effected by mounting each cutter on a support structure which is mounted on a rigid frame member of the machine chassis for adjustment about a pivot axis extending obliquely to the cutting edge, and preferably longitudinally of the vehicle.

3,733,106

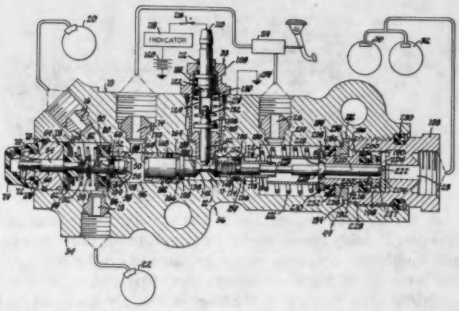
COMBINATION VALVE ASSEMBLY WITH PROPORTIONER OVERRIDE

Richard C. Rike, Dayton, and Ronald L. Shellhause, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 17, 1970, Ser. No. 72,992

Int. Cl. B60t *13/00*

U.S. Cl. 303—6 C 9 Claims



A combination valve assembly for a dual circuit brake system in which a metering valve is in one circuit, a proportioning valve is in the other circuit, and a hydraulically reset pressure loss warning indicator unit is sensitive to both circuits. Actuation of the warning unit because of pressure loss in the metering valve circuit causes the proportioning valve to be overriden by removing one of the valve elements from a proportioning position so that pressure through the valve is not proportioned.

3,733,107

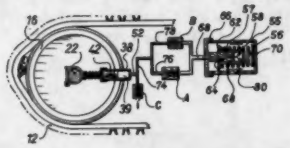
ENDLESS TRACK TENSION RELEASE MECHANISM

Gilles Yvon Cote, and Jacques Bombardier, both of Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada

Filed July 19, 1971, Ser. No. 163,823

Int. Cl. B62d *55/30*

U.S. Cl. 305—10 4 Claims

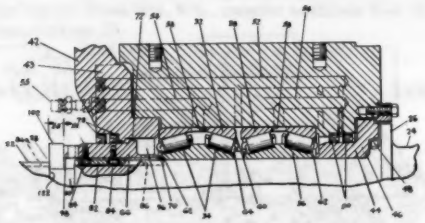


The disclosure herein describes a mechanism adapted to take up the overload exerted on the track of a crawler-type vehicle when an obstruction is lodged between the track and the wheel. The mechanism consists of a first cylinder filled with a fluid, such as oil or grease, and which receives a piston with one end connected to a wheel axle of the vehicle; the cylinder is hydraulically connected to a second fluid-filled cylinder by means of hydraulic conduits and valves. When the inward force on the wheel axle exceeds a predetermined value, the grease or oil in the first cylinder is transferred to the second cylinder; when the obstruction is removed, a prestressed spring in the second cylinder causes the return of the grease or oil into the first cylinder which, in turn, actuates its piston to return the wheel to its original position. A safety check valve is provided to allow the grease to be discharged outside the mechanism if the inward force on the wheel axle exceeds a second predetermined value greater than the first predetermined value.

3,733,108
THRUST MECHANISM FOR A MILL ROLL BEARING ASSEMBLY AND THE LIKE

Andrew J. Petros, and James M. Minteer, both of Pittsburgh, Pa., assignors to Mesta Machine Company, Pittsburgh, Pa.

Filed Mar. 31, 1971, Ser. No. 129,898
Int. Cl. F16c 35/06
U.S. Cl. 308—236 16 Claims

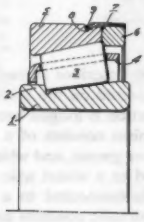


A thrust mechanism on a shaft structure comprises a member slidably mounted on the structure for movement longitudinally thereof, stop means positioned on the structure at the terminus of such movement, and first and second thrust members. The first thrust member is slidably mounted on the structure for movement longitudinally thereof into bearing contact with the slidable member. Means are provided for slidably mounting the first thrust member against turning movement thereof relative to the structure. Second stop means are provided on the shaft structure, together with means for mounting the second thrust member against the second stop means for turning movement thereof relative to the shaft structure. Means are provided for securing the second thrust member to the structure against further turning movement thereof following a predetermined limited angular displacement of the second thrust member, together with means on at least one of the thrust members and engageable with the other of the thrust members for urging the first thrust member and the slidable member against the first stop means and for urging the second thrust member against the second stop means.

3,733,109
ROLLING BEARING, E.G. TAPER ROLLER BEARING

Stig Lennart Hallerback, Vastra Forlunda, Sweden, assignor to SKF Industrial Trading and Development Company, Amsterdam, Holland

Filed May 3, 1971, Ser. No. 139,351
Claims priority, application Sweden, May 8, 1970, 6318/70
Int. Cl. F16c 33/58
U.S. Cl. 308—216 4 Claims

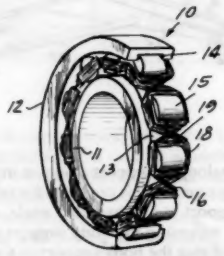


Rolling bearing, for example a taper roller bearing of a unitized type, showing at least one separately arranged supporting flange ring for the rolling bodies, characterized thereby that a resilient element is fixed to the periphery of the supporting flange ring and that a part of the resilient element is projecting axially outside the supporting element and is at its outer part formed as a hook-shaped part projecting radially inwardly or outwardly, which part is intended to cooperate with a groove in the inner or outer periphery of the bearing race ring which groove has a section essentially corresponding to the hook part of the resilient element.

3,733,110
MULTI-MATERIAL FILAMENT WOVEN CAGE

Paul B. Davis, Sinclairville, N.Y., assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 17, 1972, Ser. No. 244,535
Int. Cl. F16c 33/46
U.S. Cl. 308—217 11 Claims

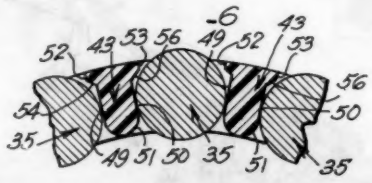


A bearing cage and a method for manufacturing a cage wherein the cage consists of a plurality of circumferentially spaced radially directed cylindrical or rectangular pockets for receipt of roller elements, each pocket having at least a portion of its walls defined by a wound filament of a first material and the cage being defined by a wound filament of a second material.

3,733,111
TAPERED ROLLER BEARING ASSEMBLY WITH ANTIFRICTION MOLDED CAGE

Jerry C. Harlan, Madison, and William A. Angus, Lebanon, both of Tenn., assignors to TRW Inc., Cleveland, Ohio

Filed June 29, 1971, Ser. No. 157,931
Int. Cl. F16c 33/46
U.S. Cl. 308—218 1 Claim



A tapered roller bearing cage assembly in which the retainer cage is formed of a one-piece molded plastic ring having a series of circumferentially spaced slots for receiving the roller elements of the assembly and ribs between the slots for maintaining the roller elements within the slots.

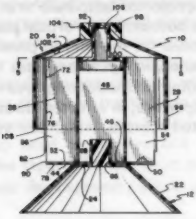
3,733,112
BOOK MATCH DISPENSER

Delbert C. Marquardt, 1506 Laura, Wichita, Kans.

Filed Mar. 1, 1972, Ser. No. 230,657
Int. Cl. A47f 1/00
U.S. Cl. 312—97.1 8 Claims

A Lazy Susan type dispenser wherein book matches are top loaded in vertical dispensing magazines spaced about the

center of a rotary body. A dispensing slot at the bottom of each magazine limits withdrawal to a single book of matches



at a time, while a removable cover nonrotatably carried by the body discourages unauthorized removal of books of matches from the top of the magazines.

3,733,113

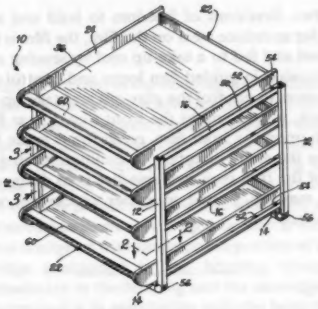
DRAWER ASSEMBLY

Joseph B. Glassford, 613 North Lindberg, Griffith, Ind., and John Daniel Lazar, 8940 White Oak, Munster, Ind.

Continuation-in-part of Ser. No. 776,070, Nov. 15, 1968, abandoned. This application Jan. 15, 1971, Ser. No. 106,655

Int. Cl. A47b *88/04*

U.S. Cl. 312—330 **20 Claims**



An assembly consisting of a frame comprising upright corner posts and horizontally extending connecting members. One set of connecting members extends longitudinally of the assembly and tracks are integrally formed with these members for receiving the lower edges of drawers included in the assembly. Tracks may also be attached to existing walls adjacent a space where drawers are desired. All track designs include passages which cooperate with pins on the sides of drawers to facilitate removal of the drawers, the pins otherwise serving as stop means for the drawers. The side walls of the drawers define the lower edges, and a bed portion extends between these side walls. The bed portion may be formed of a fiberboard material which can be bent at its leading and trailing edges for forming front and back walls for the drawer. The side walls define grooves for receiving the side edges of the bed, and additional groove portions are provided for receiving an over-hanging portion connected to the front wall of the bed and defining a handle for the drawer.

3,733,114

DIELECTRIC FRAME BEAM WAVEGUIDE

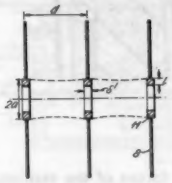
Pier Francesco Checcacci, and Annamaria Scheggi, both of Firenze, Italy, assignors to Consiglio Nazionale Delle Richerche, Roma, Italy

Filed Sept. 23, 1971, Ser. No. 183,046

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **5 Claims**

An iterative or beam waveguide consisting of several guide elements which are identical, parallel, inter-equidistant and coaxial to the beam's axis, characterized by the fact that it is made up of several identical cross sections realized in dielectric material, with each pair of cross sections having a function equivalent to that of a resonator formed by a pair of flat parallel reflectors symmetrically placed, with each reflector having a stepped edge and with the dimensions of said cross sections having outside measurements little greater than the beam's, the beam being in said cross sections, which are placed at equal distances from each other, the distances being equal to



those separating the cross sections' equivalent resonators' reflectors, every cross section, which carries out a function equivalent to that of the resonators' reflectors' peripheral step corresponding to the cross section, creating a phase jump having a transverse area width large enough to allow reconstructing the original size of the beam modified, as it were, during passage from one cross section to the next, and having a thickness computed in a way to correspond to minimum loss or attenuation, which can be suffered by a beam-type wave.

3,733,115

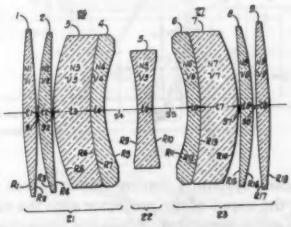
SYMMETRICAL OPTICAL LENS SYSTEM

Arthur Cox, Park Ridge, Ill., assignor to The Austin Company, Cleveland, Ohio

Filed May 17, 1971, Ser. No. 143,954

Int. Cl. G02b *9/64*

U.S. Cl. 350—214 **19 Claims**



An optical lens system is disclosed comprising nine elements having a reduced Petzval sum, a wide field and low secondary spectrum Spherical aberrations, coma, astigmatism and distortion are similarly reduced resulting in a diffraction limited superachromat.

3,733,116

MIRRORS HAVING STRETCHED REFLECTIVE SHEET MATERIALS

Mark Earle Hutchinson, Goffstown, N.H., assignor to American Velcro, Inc., Manchester, N.H.

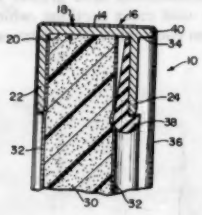
Filed Apr. 20, 1972, Ser. No. 245,720

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **8 Claims**

A planar mirror having a reflective surface including a metallized thin film reflective sheet material in a stretched condition over a raised ridge on one side of the supporting

frame, with means for securing the film in the stretched condition over the frame. A resilient wedge-like member is positioned and gripped between an upper flange member of each frame member and a supporting substrate member such that



compressive reaction forces of the resilient members are in balanced equilibrium with compressive and bending forces of the film thus creating a continuous and optically correct reflecting mirror surface.

3,733,117

FILM-TAPE SYNCHRONIZATION SYSTEM

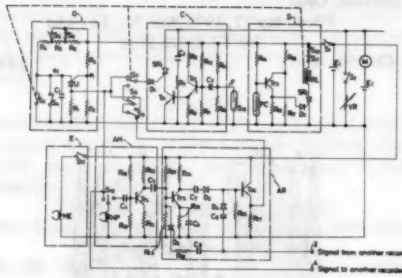
Mitsutoshi Ogiso, Kawaski-shi, Kanagawa-ken; Takashi Itani, Ota-ku, Tokyo, and Kiyoshi Takahashi, Kunitachi-shi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Shimomaruko, Ota-ku, Tokyo, Japan

Filed July 26, 1971, Ser. No. 165,999

Claims priority, application Japan, July 24, 1970, 45/64859

Int. Cl. G03b *31/04*

U.S. Cl. 352—22 **14 Claims**



In the disclosed system, a control circuit drives a projector by comparing the speed of the projector with the rate of clock signals from a pulse generator. When the projector reaches a start index on the film a detector disables the pulse generator so that the control circuit stops the projector. At the same time the detector connects the control circuit to the tape which has clock signals recorded along with the sound. As soon as the tape reaches the point where the sound and clock signals begin the control circuit restarts the projector and keeps it running in synchronism with the tape.

3,733,118

FILM TRAINING PROJECTOR

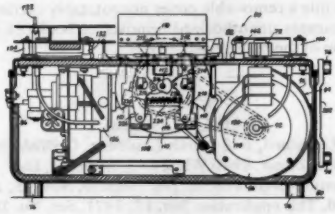
Richard P. Gundlach, Belleville, Ill., assignor to Gamco Industries, Inc., Big Spring, Tex.

Division of Ser. No. 814,127, April 7, 1969, Pat. No. 3,623,801. This application June 28, 1971, Ser. No. 157,198

Int. Cl. G03b *21/02*

U.S. Cl. 352—97 **4 Claims**

A visual training projector for projecting intelligible matter from one or two films. The projector may be used to project stationary pictures or motion pictures, as desired, by control from a remote control unit such as a remote operator's handle. Provision is made through a specially designed blower to provide for cooling the projector lamp bulb to accommodate projection from either a horizontal or vertical plane. Special loading means are provided for the film in pressure plates at the projector through solenoid operated gates to provide ready accessibility for loading and unloading. Advancement of the film, past the film aperture, is effected through solenoid and cam operated vibrated shuttles, which are mounted on a ball



pivot for two directions of freedom to hold and actuate the film. In order to reduce wear on the film, the film is taken from a supply reel and fed to a take-up reel by sensing arms which sense the tension in guided film loops and control supply and take-up motors to control the play out and take up of the film reels. Where, in addition to the front film, a rear film is used for fixation upon the front film, provision is made for feeding the films in the same direction to facilitate timing. The construction of the film reels and spindles is so designed that the film reels may be wound in either clockwise or counterclockwise direction.

3,733,119

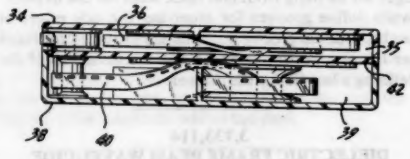
AUDIO-VISUAL SYSTEM

Paul D. Catalano, Manhasset; Norman Buten, Douglaston, both of N.Y.; George H. Eash, Encino, Calif., and Frank V. Emanuel, Cherry Hill, N.J., assignors to Retention Communication Systems, Inc., New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,794

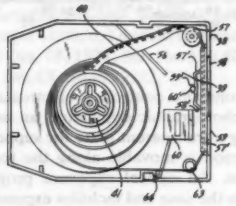
Int. Cl. G03b *21/00*

U.S. Cl. 352—78 R **1 Claim**



An audio-visual system including a cartridge and an audio-visual housing. The cartridge contains an endless tape on one reel and an endless filmstrip in a loop. Means are also provided on the cartridge to bring the continuous tape and continuous filmstrip into communication with openings to the exterior of the cartridge. The audio-visual housing is adapted to

receive the cartridge and start means on the housing are provided responsive to reception of a portion of the cartridge within the housing to activate a tape drive motor, a lamp and a power source. Tape engaging and audio pick-up means are in the housing to engage the exposed portion of the tape when the cartridge is received in the housing and is responsive to the tape drive motor to drive the continuous tape. Audio means are in the housing in communication with the pick-up head means to transmit the sound tracks from the tape. Discriminator means are positioned in the housing in communication with the pick-up head to receive and respond to a signal received from the tape. Film transport means are also in the housing to engage the exposed portion of the filmstrip when



the cartridge is received in the housing and is adapted to transport the film. Film advance means is positioned in the housing and is in communication with the discriminator means and the film transport means so that when a signal is received by the discriminator means it will respond by causing the film advance means to drive the film transport means and transport the film to thereby permit the tape and film to be advanced in a predetermined sequence. A projector lens is located in the housing and is aligned with the exposed portion of the film and the cartridge positioned in the housing. Condenser and director means are in the housing and the cartridge positioned in the housing and is in association with the lamp to condense and direct light from the lamp onto the rear of the film and to pass through the film and aligned lens and thereby project an image of the exposed frame of film. Finally, cooling means is positioned in the housing to assist in preventing excessive heating of the exposed filmstrip and the interior of the housing.

3,733,120

FILM DRIVE, AND CINEMATOGRAPHIC APPARATUS INCORPORATING THE SAME

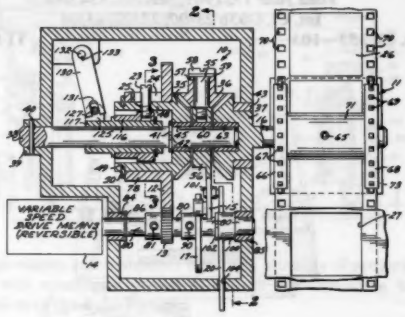
Lloyd M. Adams, Santa Ana, Calif., assignor to Geotel, Inc., Amityville, Long Island, N.Y.

Division of Ser. No. 843,892, June 16, 1969, Pat. No. 3,586,224, which is a continuation-in-part of Ser. No. 528,718, Feb. 21, 1966, abandoned. This application June 11, 1971, Ser. No. 152,359

Int. Cl. G03b *21/48*

U.S. Cl. 352—187 **33 Claims**

A cinematographic apparatus which incorporates, as the film-drive mechanism therein, a differential gear having two inputs and one output, the latter being connected to the sprocket which drives the film. One of the inputs is driven at a constant speed, and the other is driven alternately in opposite directions by a cam, the cam being so shaped that the film will alternately advance and dwell in intermittent manner. Locking apparatus is provided to insure that the film remains absolutely stationary during each dwell period, despite variations of or wear in the drive components. A mechanism is provided to disengage the cam from such other input, so that the film may be driven rapidly in a nonintermittent manner and



still maintain precise framing. A framing mechanism is provided to achieve correct framing, in a manner which is not subject to creep, without destroying the proper phase relationship with the shutter.

3,733,121

MICROFICHE READER

Louis A. Smitzer, San Diego, Calif., assignor to Seaco Computer-Display Incorporated, Garland, Tex.

Filed Dec. 15, 1969, Ser. No. 885,203

Int. Cl. G03b *23/08, 1/48, 21/20*

U.S. Cl. 353—27 **6 Claims**

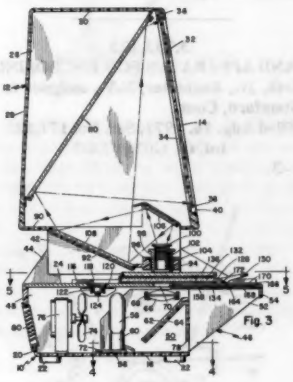


Fig. 3

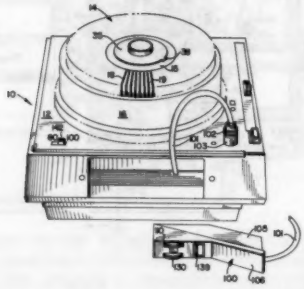
A reader for viewing enlarged images of selected portions of a flat film microfiche. The film is sandwiched between flat transparent plates of a holder, which is easily slidable in a carriage to bring a selected micro image into the optical projection path, positioning being facilitated by a guide in the table on which the carriage moves. To ensure precise focussing, the lens unit rides on and is supported by the upper plate of the film holder. When the holder is pulled forward the upper plate automatically rises to allow removal or replacement of the film. The illumination source and a portion of the optics are disposed within a removable drawer translatably positioned in the reader housing.

3,733,122

RANDOM SELECTION SYSTEM FOR SLIDE PROJECTORS AND THE LIKE

Oleg Szymber, Elk Grove, Ill., assignor to GAF Corp., New York, N.Y.

Filed June 17, 1969, Ser. No. 834,040
Int. Cl. G03b *23/00, 23/02, 23/06*
U.S. Cl. 353—103 11 Claims



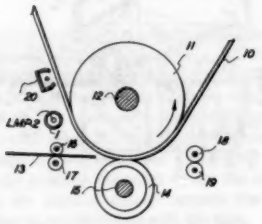
A handpiece connected to a slide projector includes two thumb actuated selector wheels for dialing any number from "01" to "100". These thumb wheels operate a pair of variable resistors in the handpiece for establishing a predetermined electrical resistance for each selected number. The slide projector has a circular slide tray with 100 slide receiving spaces. An electric motor drives this tray and also movable contacts of a pair of variable resistors in the projector. A balancing resistance circuit connects the motor with the variable resistors in the projector and in the handpiece. When the resistance selected by the thumb wheels is unequal to the resistance of the variable resistors in the projector, the circuit is energized for advancing the tray. When the resistance established by the variable resistors in the projector is equal to the resistance established by the variable resistors in the handpiece, the circuit is de-energized thereby positioning the selected tray space adjacent the projection gate of the slide projector.

3,733,123

METHOD AND APPARATUS FOR ENCLOSING A LAMP

Charles F. Roth, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1971, Ser. No. 171,827
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 4 Claims



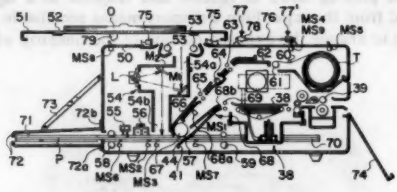
Method and apparatus for keeping a light source in an electrophotographic machine free from contaminating deposits of electroscopic toner material in which the light source is enclosed within an electrically chargeable closure member to physically isolate the light source from the toner material, and the closure member is charged to a polarity. The transparent portion of the closure member may be either a dielectric material or glass coated with a transparent conductive layer to form an electric field to repel the toner material away from the closure member and the light source.

3,733,124

TRANSFER TYPE ELECTRONIC PHOTOGRAPH DUPLICATOR

Susumu Tanaka; Masayoshi Inoue, both of Sakai; Yuji Enoguchi, Higashiosaka; Kenichi Wada, Toyokawa, and Takao Fujiwara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed May 17, 1972, Ser. No. 254,082
Int. Cl. G03g *15/10, 15/00*
U.S. Cl. 355—10 11 Claims



In an electronically controlled electrostatic latent image transfer type photographic duplicator, an original document receiver having a transparent plate for supporting an original document thereon is movable along the top surface of the duplicator case. An optical exposure projection system is mounted within the case and includes exposure and image slit openings. The original document receiver is reciprocated along the top surface of the duplicator case to completely expose the original document as it moves in one direction traversing the slit opening. A photosensitive plate reciprocates along a path parallel to and spaced from the original document receiver and is reciprocated at the same speed and in the same direction as the document receiver so that an image of the original document is projected onto the photosensitive plate as it moves in the same direction as the document receiver to completely traverse the image slit opening.

The electrostatic latent image formed on the photosensitive plate is transferred to a transfer paper having a conductive base and an image transfer surface by contacting the transfer surface with the electrostatic latent image on the photosensitive plate as both the contacting portions of the transfer surface and the photosensitive plate move at the same speed and in the same direction.

The transfer paper is deposited on the photosensitive plate so that its leading edge overlaps the leading edge of the photosensitive plate and is separated therefrom by a separating mechanism which includes a guide plate having a surface extending into the plane of the path of the photosensitive plate and including thereon comb-like projections. A member rotatable to a first and second position also includes comb-like projections and is biased into a first position wherein the comb-like projections are upstanding in the path of the transfer paper and the member is rotated to a second position by contact with the leading edge of the photosensitive plate having comb-like projections on the leading edge thereof; with the rotating member in the second position, its comb-like projections, as well as the comb-like projections on the photosensitive guide plates, are in interleaving relationship to form a continuous surface for guiding the transfer paper to a developing means.

The image on the transfer paper is developed by contacting the transfer surface thereof with a developer. In one embodiment, the transfer paper is transported across a developing tank in close proximity to an electrode plate by an endless belt. In another embodiment, the developing tank is divided into two compartments separated by a weir and developer is pumped into one compartment and flows to the other compartment whereupon it flows over an electrode plate having wires on the surface thereof which have a height slightly less than the flow of developer. The transfer surface is carried across the electrode plate at a greater speed than the flow of the developer stream.

The developed image is fixed by removing excess developer from the transfer paper by squeezing it between one or more squeeze rollers, respective ones of which may be in contact with a hygroscopic roller and a cleaning roller. The transfer paper is then dried by guiding it in close proximity to a heater and a blower. In a modification of the fixing mechanism, the squeeze rollers are caused to be separated in the absence of transfer paper therebetween. Additional developer may also be removed from the transfer paper by a rotating wiper roller the surface speed of which is greater than the speed of the transfer paper passing from the electrode plate, or a doctor blade which scrapes the transfer surface.

3,733,125

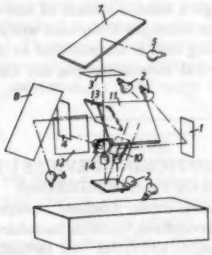
PHOTO-COMPOSING MACHINES

Daniel Camille Cornelius Dewaele, Beselare, Belgium, assignor to Lamson Paragon Limited, London, England

Filed Oct. 15, 1971, Ser. No. 189,504

Int. Cl. G03b *27/52, 27/70*

U.S. Cl. 355—43 **7 Claims**



This invention is concerned with a photocomposing machine and is more particularly concerned with a photocomposing machine for use in preparing printing plates for use in a machine for printing business forms. In such a machine text matter is prepared on a master sheet which is mounted on a carrier which moves through the machine in such a way that the matter to be projected is correctly positioned in the photocomposing machine Mask mechanisms and also provided in the photocomposing machine and these Mask mechanisms have to be moved at the same time as the carrier. The present invention provides a memory system to record a predetermined position of the carrier and masks and hence record a position of reproduction of the representation on the sensitized material.

3,733,126

STEP-BY-STEP DRIVE USEFUL IN MICROFICHE CAMERAS

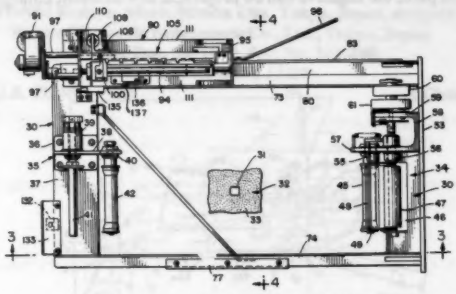
Philip J. Brownscombe, Millington, N.J., assignor to Eugene Dietzgen Co., Chicago, Ill.

Filed Aug. 4, 1971, Ser. No. 169,025

Int. Cl. G03b *27/44*

U.S. Cl. 355—54 **10 Claims**

A microfiche camera embodying a film-indexing mechanism for frame-by-frame and row-by-row exposure of the film in a grid-like fiche pattern, the drive embodying a first carriage mounted for linear movement on a frame, a second carriage mounted for linear cross-motion on the first carriage, and a step-by-step drive for each carriage including a ball screw, a traveler on the screw, a latch member on the traveler



and a pivotable catch member bearing a plurality of projecting teeth with spacings between the teeth corresponding to a dimension of the fiche frames.

3,733,127

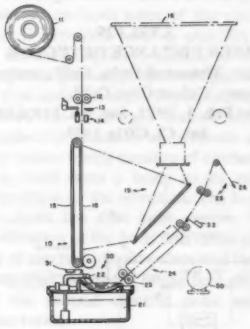
CONTINUOUS TONE PHOTOCOPIER

Barry R. Perlis, Lexington, and Alfred K. MacKenzie, Wayland, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Aug. 14, 1970, Ser. No. 63,758

Int. Cl. G03g *13/10*

U.S. Cl. 355—10 **4 Claims**



An electrostatic copier apparatus for reproducing continuous tone images which utilizes the effect of saturation, or near saturation, development of the latent electrostatic image by using in a preferred embodiment a two-speed motor which feeds the paper to the developer station at a first relatively fast rate of travel, feeds the paper through the developer station at a second relatively slow rate of travel to achieve such saturation, or near saturation, development, and thereupon feeds the paper from the developer station to the apparatus outlet at the first relatively high rate of travel to minimize the overall time spent in the reproduction process.

3,733,128

ELECTROPHOTOGRAPHIC MICROFILM RE-ENLARGING APPARATUS

Gerhard Naumann, Wiesbaden-Biebrich; Gerhard Marx, Hahn, and Erich Blume, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiegesellschaft, Wiesbaden-Biebrich, Germany

Filed Apr. 21, 1971, Ser. No. 135,870

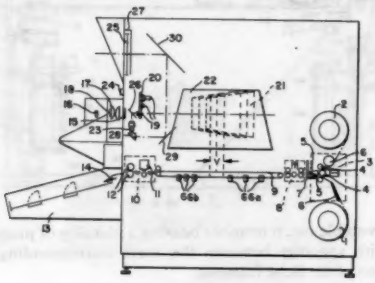
Claims priority, application Germany, Dec. 11, 1970, P 20 50 012.3

Int. Cl. G03b *13/28*

U.S. Cl. 355—45 **12 Claims**

This invention relates to an electrophotographic microfilm re-enlargement apparatus comprising, for optical projection

of a negative, an optical system including a plurality of lens means individually insertable into a projection beam and so selected that, with an at least approximately constant projection path, the negative can be projected, at a different enlarge-



ment factor for each lens, onto a fixed image plane, and preselectable drive means for moving optical elements of the optical system into positions corresponding to each available enlargement factor.

3,733,129

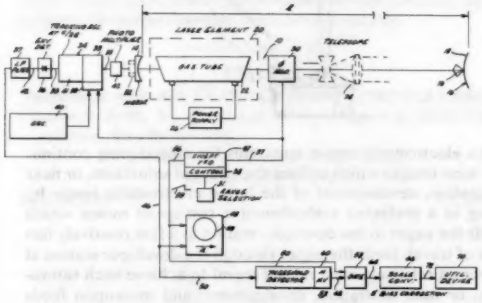
LASER DISTANCE DETECTOR

William B. Bridges, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 1, 1971, Ser. No. 111,636

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **13 Claims**



A system utilizing a laser for accurately measuring range from a first position to a second position by providing a laser cavity having a reflective mirror at the first position and a target as the reflective mirror at the second position, and by detecting the occurrence of an induced optical mode locking condition in the laser cavity. The system phase modulates the energy in the cavity at a swept modulation frequency with the amplitude of the intermode beats or differences being detected to determine the effective length of the cavity. At phase modulation frequencies near $c/2l$ (c is the velocity of light in the medium and is the length of the cavity) mode locking occurs in such phase relations that the beat signal appears to be a pure FM signal with a relatively small amplitude and at phase modulation frequencies at $c/2l$ a different type of mode locking produces a large amplitude signal, either of which conditions may be utilized to provide a scaled value of l or range.

3,733,130

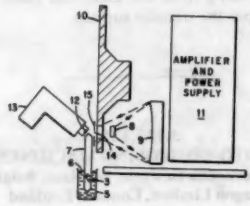
SLOTTED PROBE FOR SPECTROSCOPIC MEASUREMENTS

Jack P. Young, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 7, 1972, Ser. No. 232,488

Int. Cl. G01j *3/42*, *3/50*

U.S. Cl. 356—74 **2 Claims**



A device is provided for conducting colorimetric or absorption spectral measurements which consists of a transparent material of proper index of refraction and having a geometrical design such that an entering beam of light into the material is totally reflected internally so as to proceed from an entering point into and through a sample system of known dimensions whereupon said beam emerges from said material through a single sealable opening and is transmitted to a conventional detector where spectral measurements are carried out in a normal manner.

3,733,131

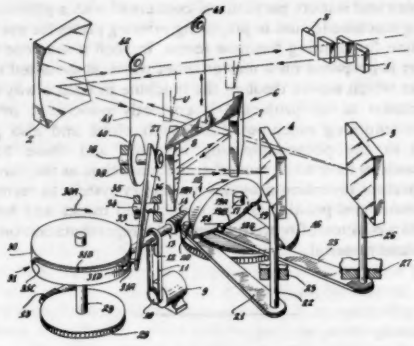
OPTICAL BEAM SWITCHING DEVICES UTILIZING A PAIR OF PLANE MIRRORS

Henry Manifold Mould, Penn, England, assignor to Perkin-Elmer Limited, Beaconsfield, Buckinghamshire, England

Filed Aug. 5, 1971, Ser. No. 169,343

Int. Cl. G01j *3/12*, *3/42*

U.S. Cl. 356—100 **6 Claims**



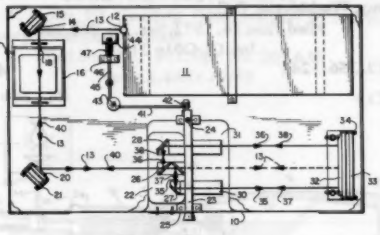
Where it is desired to "switch" a beam of radiant energy from a first to a second receiving element, it is proposed to introduce into the beam a pair of parallel facing plane mirrors rigidly attached to each other, along a line parallel to the reflective surfaces. This eliminates undesired change in the direction of the reflected beam caused by unintentional rotation of the two-mirror assembly about the line of introduction. The device may be used in a two-grating scanning monochromator to cause gradual change-over of the beam from one grating to the other. The two-mirror assembly movement is preferably interconnected to the grating drive to cause movement of the assembly at the appropriate time, and preferably in such manner as to allow reversing of the monochromator.

3,733,132

COLLIMATOR FOR BINOCULAR INSTRUMENTS

Stephen Beecher Leighton, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Oct. 26, 1971, Ser. No. 192,267
Int. Cl. G01b 11/26
U.S. Cl. 356—138 8 Claims



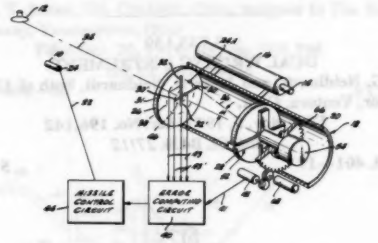
A precise system for aligning the beam splitting system such as the prisms of a binocular instrument. A beam of collimated light passes through a hole in a screen to a flat mirror and returns coincident with itself to the screen. When the beam splitter to be checked is placed in the path of the light, two rays are formed. These rays travel to the flat mirror and return to the screen through the beam splitter. Any non-parallelism of the rays is indicated by light spots not centered on the screen.

3,733,133

BALANCED TILTABLE, ROTATING MIRROR WITH ITS OPTICAL AXIS ANGULARLY OFFSET FROM ITS AXIS OF ROTATION

Arthur S. Chapman, Rolling Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 13, 1970, Ser. No. 19,374
Int. Cl. F41g 7/00; G02b 17/00
U.S. Cl. 356—152 14 Claims



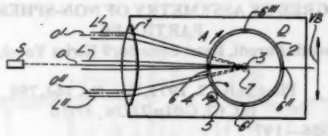
The mirror, such as a mangin-mirror, is useful in a system which automatically detects a deviation between a target and an object moving towards the target by comparing the line of sight to the target and the line of sight to the object. The mirror has a first axis about which it rotates and an optical axis which is displaced at an angle from the rotational axis. The rotational axis is kept coaxial with the target line of sight. The mirror is selectively tiltable to one of two discrete positions about its optical axis so that, as the mirror rotates, the reflection from the object forms two images, corresponding to the two mirror positions which conically scan a detector plane. Two pairs of right-angled light detectors, one for each position, are located on the plane. By comparing the time intervals for each pair of detectors when the reflection crosses the detectors, the deviation can be calculated, and by other equipment corrections in the path of the object can be made.

3,733,134

DEVICE FOR MEASURING MECHANICAL DEVIATION AT REMOTE LOCATION

Yoshiki Kadoya, Mure, Mitaka City, Tokyo, Japan, assignor to Kyowa Electronic Instruments Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,498
Int. Cl. G01b 11/26
U.S. Cl. 356—152 8 Claims



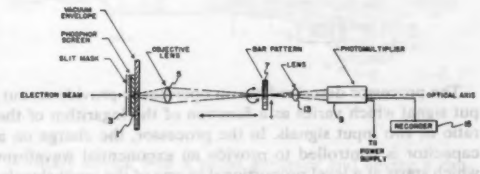
A measuring device for mechanical deviation or vibration at remote location comprising a first light source projecting a light beam onto the device, a condenser lens for collecting the projected light, a photoelectric element positioned at the focus of said condenser lens, a rotating drum rotating in constant speed and having its axis passing the focus in a direction normal to a plane including axis of the light beam and the direction of the deviation to be measured and being arranged to interrupt the path of the projected light beam between the condenser lens and the photoelectric element, and further comprising a local light source and a second photoelectric element being placed on both sides of the rotating drum. The rotating drum is provided with a plurality of slits spaced equidistantly on the periphery, parallel to the drum axis, so that to interrupt the path of projected light beam periodically to produce a first series of electric output pulses and to interrupt the path of the local light source impinging onto the second photoelectric element to produce second series of electric output pulses which consists of a reference pulse train. The device is fixed onto a body to be measured for the mechanical deviation or the vibration. The body is located at a remote place from the first light source. The mechanical deviation or vibration of the body will cause phase variation of the first series of electric output pulses and the deviation is detected by comparing the phase of the first electric pulse series with that of the second electric pulse series constituting reference pulse series.

3,733,135

METHOD AND APPARATUS FOR MEASURING IMAGE FORMING PROPERTIES OF AN IMAGE DISPLAY PANEL

Nicholas A. Diakides, Alexandria, and Richard L. Sormberger, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 23, 1971, Ser. No. 155,698
Int. Cl. G01b 11/00, 9/08, 9/00
U.S. Cl. 356—156 8 Claims



Method and apparatus for measuring image forming properties of optical and electro-optical systems in terms of modulation transfer function wherein the apparatus comprises a sim-

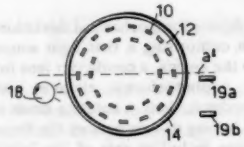
ple lens focussing system, a filar eye piece with a desired pattern, a photomultiplier and associated mechanisms for aligning the pattern with an optical image, and a variable speed reversible motor for scanning the pattern over the image; and wherein the method provides objective electronic focusing and alignment of the image.

3,733,136

METHOD AND APPARATUS FOR MEASURING THE DEGREE OF ASSYMETRY OF NON-SPHERICAL PARTICLES

Asher Porath-Furedi, Batei Even 64/9 Kiriat Yovel, Jerusalem, Israel

Filed July 12, 1971, Ser. No. 161,798
Int. Cl. G01n *21/24, 33/16*
U.S. Cl. 356—197 **9 Claims**



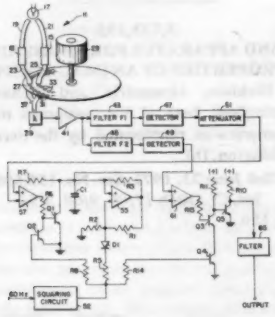
Method and apparatus for measuring the degree of assymetry of non-spherical particles (e.g., erythrocytes, i.e., red blood cells) wherein the particles are suspended in a light-transparent medium, the medium is mixed to cause the particles to rotate while light is projected through the medium, and the differences in the profiles of the particles to the light when the particles move at different angles to the path of the light through the medium are detected to provide an indication of the degree of assymetry of the particles.

3,733,137

LOG RATIO TRANSMITTANCE SIGNAL PROCESSOR FOR PHOTOMETRIC APPARATUS

Rosario S. Badessa, c/o Damon Corp. 115 Fourth Ave., Needham Heights, Mass.

Filed Jan. 12, 1971, Ser. No. 105,802
Int. Cl. G01n *21/22*; **G01j** *3/42*
U.S. Cl. 356—204 **4 Claims**



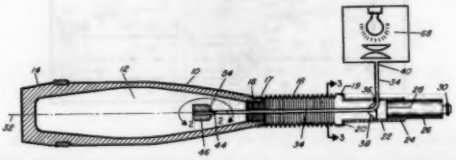
The processor described herein operates to provide an output signal which varies as a function of the logarithm of the ratio of two input signals. In the processor, the charge on a capacitor is controlled to provide an exponential waveform which starts at a level proportional to one of the input signals. Preferably, the exponential is positive, i.e., regenerative rather than degenerative. A squarewave pulse is initiated simultaneously with the starting of the exponential waveform. When the exponential waveform reaches a level proportional to the other of the input signals, this squarewave pulse is terminated. By repetitively generating squarewave pulses in this manner, a pulse train output signal is obtained having an average amplitude or d.c. component which is proportional to the logarithm of the ratio between the two input signals.

3,733,138

OPTICAL SYSTEM FOR INSPECTION OF A CAVITY

Mark H. Weinberg, Short Hills, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 14, 1972, Ser. No. 262,900
Int. Cl. G01n *21/16*
U.S. Cl. 356—241 **4 Claims**



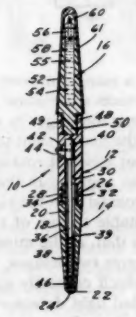
An optical system for inspecting a 360° annular section of a housing interior. The optical system includes a telescope whose objective lens end is axially aligned and slidably affixed to a hollow cylindrical extension tube, a hollow cylindrical bellows has one end fixedly attached to the objective lens end and the other end slidably attached to the housing so that it is axially aligned with the extension tube and the housing, a light transmitting means extends longitudinally through said extension tube and bellows so that its output end protrudes into the housing interior, a 360° reflecting means is axially disposed adjacent to the light means output end, a 360° viewing means is axially positioned adjacent to the reflecting means so that the viewing means field of view coincides with the reflecting means field of illumination, a light source is directed into the input end of a fiber optic light pipe for illuminating a 360° area of the housing interior so that the latter may be viewed by focusing the telescope on an image formed by the viewing means reflecting surface, and the entire interior surface visually scanned by longitudinally moving the housing relative to the viewing means.

3,733,139

DUAL WRITING INSTRUMENT

John G. Neidhardt, and Joyce D. Neidhardt, both of 1232 Superior, Ventura, Calif.

Filed Nov. 5, 1971, Ser. No. 196,142
Int. Cl. B43k *27/12*
U.S. Cl. 401—17 **5 Claims**



There is herein disclosed a dual-purpose writing device having a main, central body with opened ends therein, adapted to

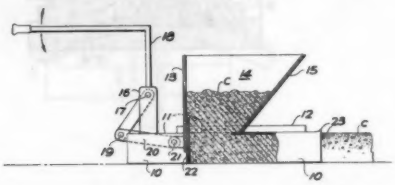
removably receive end bodies, one of the end bodies being provided with a bore in which is disposed a retractable ink cartridge, the second end body being provided with a cavity adapted to become a chamber for storing of writing fluid when a felt writing tip is disposed within the opened end thereof. The device is also provided with a cap member designed to fit as a cover over either end body.

3,733,140

CURB FORMING MACHINE

William T. James, III, Canfield, Ohio, assignor to The Renner Company, Youngstown, Ohio

Filed Dec. 20, 1971, Ser. No. 209,638
Int. Cl. E01c *19/48*
U.S. Cl. 404—98 **4 Claims**



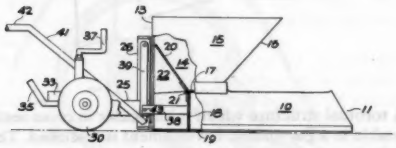
A curb forming machine comprises a manually operable steerable device for forming asphaltic concrete or portland cement mixes having no slump characteristics into a uniform curb. The device carries a curb forming shoe with a hopper thereabove slidable in relation to the shoe and communicating therewith in one position and closed with respect thereto in another. A ram is attached to a wall of the hopper and is movable toward and away from the shoe. Movement of the ram and the hopper permits asphaltic or portland cement mix to fall by gravity into the shoe and the compaction of the same in the shoe when the ram moves toward the same. The reaction force moves the curb forming machine away from the newly extruded curbing.

3,733,141

MACHINE FOR FORMING CURBING

William T. James, III, Canfield, Ohio, assignor to The Renner Company, Youngstown, Ohio

Filed Dec. 20, 1971, Ser. No. 209,796
Int. Cl. E01c *19/48*
U.S. Cl. 404—98 **5 Claims**



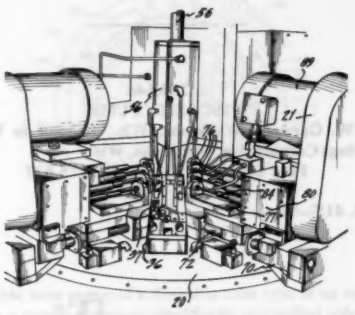
A machine for forming curbing consisting of a manually operable steerable device which compacts and shapes asphaltic concrete or portland cement mixes having no slump characteristics into uniform curbing. The machine has a curb forming shoe with a hopper thereabove and communicating therewith and a manually controlled ram to which a closure plate is hinged. Operation of the ram and the closure plate permits the asphaltic or portland cement mix to fall by gravity into the shoe where operation of the ram compacts the mix in the shoe to form the curbing. The reaction force moves the machine away from the newly extruded curbing.

3,733,142

APPARATUS FOR SIMULTANEOUSLY DRILLING AND TAPPING A PLURALITY OF WORK PIECES AT EACH OF A PLURALITY OF POSITIONS

Nils Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Division of Ser. No. 763,043, Aug. 9, 1968, abandoned. This application Feb. 24, 1971, Ser. No. 118,218
Int. Cl. B23b *39/16, 39/20*
U.S. Cl. 408—42 **5 Claims**



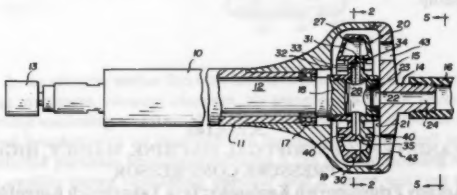
The apparatus, intended primarily for simultaneously drilling and tapping a plurality of work pieces at each of a plurality of working positions includes an annular table supporting a plurality of tapping and drilling assemblies at a plurality of spaced working positions. Rotably mounted within the annular table support is a turret having a plurality of radial arms on which are supported retractible work supporting shuttles movable toward and from working positions adjacent the tapping and drilling assemblies mounted on the annular table. Means are provided for rotating the turret to successive working positions. A novel clamp and positioning means are mounted on the shuttles for holding and accurately positioning a work supporting cartridge. Novel multiple spindle tapping and drilling assemblies permit tapping and drilling from different angles, simultaneously of a plurality of rigidly held work pieces mounted on the shuttles.

3,733,143

SPEED GOVERNED ROTARY DEVICE

James V. Theis, Jr., Park Forest, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed Sept. 8, 1971, Ser. No. 178,648
Int. Cl. F01d *1/18*
U.S. Cl. 415—80 **17 Claims**



A rotary device with a speed governor and having a centrifugally radially expandable rotor with a drive surface acted upon by pressurized fluid, either gas or liquid, for this rotating the rotor and a fluid passage in the rotor to this surface including an inlet for the fluid and valve means in the rotor fluid passage movable to restrict flow of the fluid to the surface

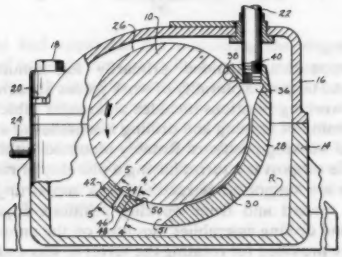
upon centrifugal expansion of the rotor in order to govern the speed of rotation. The disclosure is also directed to a rotor having such a drive surface and centrifugally operated valve means for restricting flow of the fluid in the rotor to the surface to govern the speed of rotation. The disclosure is further directed to a hollow flexible rotor expandable radially under centrifugal forces to move the sides of the rotor toward each other during this centrifugal expansion and a fluid valve in the rotor that is moved toward closed position by the centrifugal expansion to govern the speed of the rotor.

3,733,144

VISCOSITY PUMP

Willis W. Gardner, Waukesha, Wis., assignor to Waukesha Bearings Corporation, Waukesha, Wis.

Filed Sept. 8, 1971, Ser. No. 178,627
Int. Cl. F01d *1/36*
U.S. Cl. 415—90 **8 Claims**



The inlet of a relatively large viscosity pump for high speed applications is sealed by a small viscosity pump which directs a stream of oil onto the rotor of the large viscosity pump to produce an air seal that increases the inlet suction of the large viscosity pump. The small viscosity pump includes (1) an air scraper in close proximity to the rotor of the large viscosity pump immediately before the rotor enters an oil chamber, and (2) a small oil conduit which extends adjacent the air scraper to the oil chamber of the large viscosity pump. The suction produced by the air scraper draws oil up through the small oil conduit and onto the periphery of the rotor to produce an air seal at the point where the rotor enters the inlet of the larger pump.

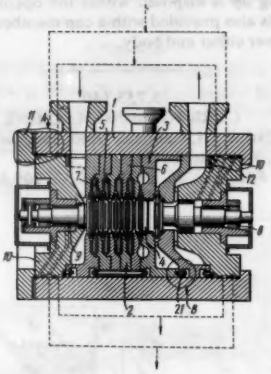
3,733,145

VAND-TYPE CENTRIFUGAL MACHINE, MAINLY, HIGH-PRESSURE COMPRESSOR

Arkady Fridmanovich Kaplansky; Izya Yakovlevich Korenblit; Andrei Filippovich Frenkel, and Alexandr Ivanovich Zakhariev, all of Leningrad, U.S.S.R., assignors to Nevsky Mashinostroitelny Zavod imeni V. I. Lenina, Leningrad, U.S.S.R.

Filed Mar. 4, 1971, Ser. No. 120,956
Int. Cl. F01d *11/00, 1/02*; F16j *15/00*
U.S. Cl. 415—112 **3 Claims**

A vane-type centrifugal machine is provided which is characterized in that rotor bearings and end seals are arranged directly in a set composed of the working compressor stages while, where this set mates with a cylinder encasing the set,



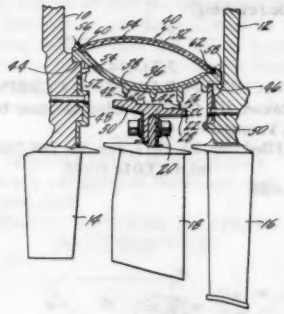
seals are mounted for the purpose of hermetically sealing in the medium being compressed.

3,733,146

GAS SEAL ROTATABLE SUPPORT STRUCTURE

Stephen Lester Smith, South Windsor, and Peter Edward Voyer, Tolland, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 7, 1971, Ser. No. 131,973
Int. Cl. F01d *11/08, 1/04*
U.S. Cl. 415—172 **4 Claims**



A toroidal structure which is lenticular in cross section and rotatable in a gas turbine environment is disclosed. The structure is described as a support member for the rotating component of a seal assembly in a high temperature application, such as a turbine rotor.

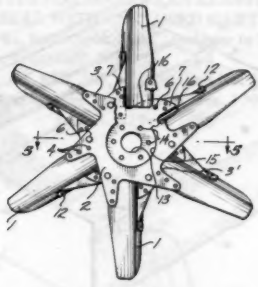
The structure is radially supported by a pair of adjacent turbine disks and comprises a pair of curved plates which cooperate during rotation to cause a low net stress in the plates. The outer plate has a raised ridge along each of its circumferential edges and correspondingly the inner plate has a butt face along each of its circumferential edges. During rotation of the lenticular structure, the ridge edges tend to draw closer together and the butt face edges tend to spread apart and since the inner plate edges are restrained by the outer plate ridges, a transfer of axial loads between the plates occurs, resulting in a reduction in the net stress in the structure.

3,733,147

RADIAL AND AXIAL AIRFLOW FAN

Samuel A. Felker, 10233 Green Lane S.W., Tacoma, Wash.

Filed Dec. 7, 1970, Ser. No. 95,768
Int. Cl. F04d *29/34*
U.S. Cl. 416—214 8 Claims



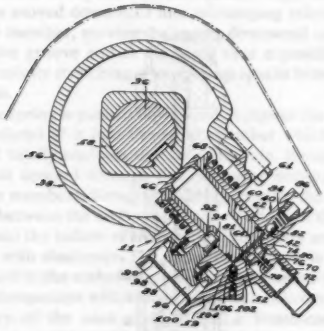
The open forward unobstructed root portions of radially extending fan blades are secured to the arms of front and rear portions spaced apart axially. A large aperture in the central portion of the front spider enables air to flow axially into a chamber between the front and rear spiders which opens radially outwardly between the root portions of the blades. Trailing edge margins of the blades are connected to the rear spider by angles riveted to such blade portions and to the rear spider and leading edge margins of the blades are riveted to arms of the front spider.

3,733,148

PUMP SUITABLE FOR A HYDRAULIC STEERING POWER SYSTEM HAVING AN AUXILIARY POWER SOURCE

William B. Goodale, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 763,228, Sept. 27, 1968, abandoned. This application June 2, 1970, Ser. No. 54,080
Int. Cl. F04b *49/00*
U.S. Cl. 417—214 1 Claim



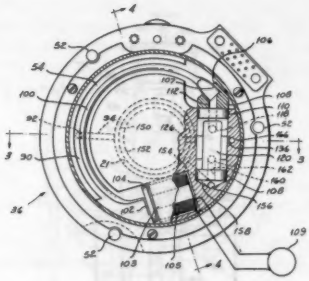
A hydraulic steering system for a motor vehicle having a primary fluid pressure source and a secondary pressure source. The secondary source comprises a pump driven by the vehicle's transmission upon demand and which is inoperative when the primary pressure source is functioning properly.

3,733,149

FLEXIBLE TUBE PUMP

Oscar D. Jacobson, New York, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Division of Ser. No. 822,524, May 7, 1969, Pat. No. 3,653,267. This application Sept. 18, 1970, Ser. No. 73,274
Int. Cl. F04b *43/00*
U.S. Cl. 417—412 5 Claims



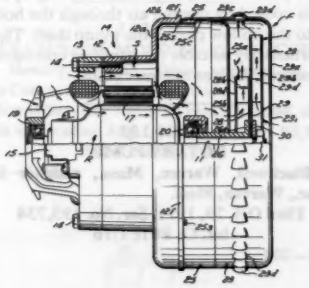
A flexible tube pump of a Bourdon tube type in an assembly including a motor means or electrically controlled solenoid to actuate the flexible tube in an arrangement in which the tube functions as a low power input pump which may be utilized to supply a liquid pressure medium to hydrostatically support bearings of a gyroscope.

3,733,150

MOTOR-FAN UNIT FOR MOVING WET WORKING AIR

John H. Porter, Talmadge, Ohio, and Robert O. Swift, Stow, both of Ohio, assignors to Ametek, Inc., New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,026
Int. Cl. F04b *35/04*
U.S. Cl. 417—424 14 Claims



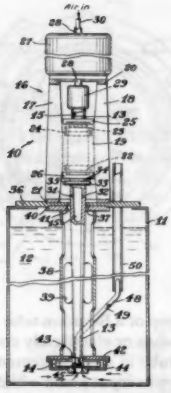
In an electric motor fan unit for environments such as washing machines, vacuum cleaners, air samplers, a motor section frame enclosing an internal motor cooling air path includes an end bracket with an enlarged rim for mounting fan shell and interior partition structures defining a fan section housing for a smaller motor ventilating impeller and a larger working air centrifugal impeller commonly mounted on the motor shaft outboard of the motor section frame and drawing respective air streams into housing axial inlets for discharge at the housing circumference. Back-to-back and axially spaced impeller dispositions and corresponding housing structures and also resultant direction of ventilating air from the motor to the air discharge region ensure both adequate motor and adjacent bearing ventilation and bearing protection from working air borne moisture, contaminants, and high temperature and humidity, by simple, low cost, durable structure.

3,733,151

PUMP ASSEMBLY FOR HANDLING LIQUID MATERIALS

Harold L. Timmons, and Henry C. Deitsch, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1972, Ser. No. 230,791
Int. Cl. F04b 17/00
U.S. Cl. 417—424 3 Claims



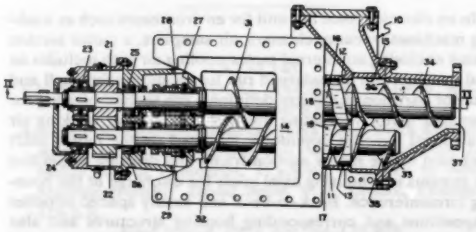
Disclosed is a pump assembly of the vertical submerged type, which has a rotatable shaft with a hollow upper portion and a solid, tapered lower portion. The pump is mounted on a tank containing liquid to be pumped by supporting the upper part of the shaft in a bearing pedestal mounted on top of the tank. A housing encloses the lower part of the pump shaft and an impeller is connected to the tip of the shaft. The impeller is enclosed by a head casing which has an inlet port and two outlet ports therein. Liquid drawn into the head casing is discharged through two separate discharge lines which converge into a single discharge line. The pump shaft is rotated by a motor having a hollow drive shaft, which is coupled to the hollow upper part of the pump shaft. During operation, the pump shaft is cooled by passing air through the hollow motor shaft and into the hollow part of the pump shaft. The pump assembly is particularly suitable for handling corrosive liquids at high temperatures, such as molten caustic.

3,733,152

ROTARY PUMP

Elliott H. Blackwell, Warren, Mass., assignor to Warren Pumps, Inc., Warren, Mass.

Filed Oct. 29, 1971, Ser. No. 193,734
Int. Cl. F01c 1/16
U.S. Cl. 418—201 5 Claims



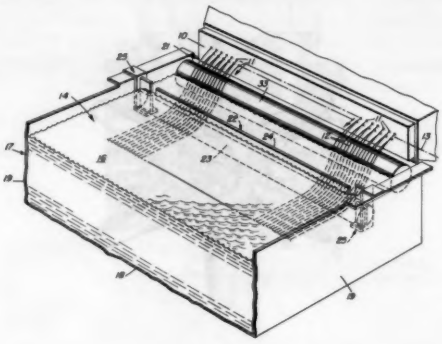
A rotary pump of the twin-screw type having a lateral inlet port at one end and an axial outlet port at the other end, the outlet port being provided with a transition member containing feed screws.

3,733,153

APPARATUS FOR MINIMIZING STRAND DROP-OFF

John Moziek, South Hadley, Mass., assignor to Monsanto Company, Saint Louis, Mo.

Filed May 14, 1971, Ser. No. 143,574
Int. Cl. B29c 25/00; B29d 7/20
U.S. Cl. 425—71 4 Claims



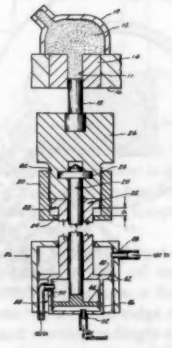
A system for controlling strand drop off at an extrusion die in a plastic stranding operation is provided. A plurality of hot polymer strands generally uniformly spaced from one another in a horizontal direction from the extrusion die pass downwardly into a cooling bath beneath a hold down bar assembly. The continuously moving strands slidably engage circumferential surface portions of a cylindrical member positioned in the surface of the cooling bath which is revolvably driven by the strands passing thereover. When a strand breaks, it almost immediately contacts an adjacent strand and is immediately bonded thereto, all strands still being in a thermoplastic condition, so that all strands continue to move forward down into the cooling bath without loss of the broken strand.

3,733,154

DEFLECTION COMPENSATION SYSTEM FOR PRESS

Joseph E. Smith, Birmingham; Georges D. DeTroyer, Grosse Ile, and Raymond P. DeSantis, Royal Oak, all of Mich., assignors to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Aug. 17, 1971, Ser. No. 172,510
Int. Cl. B30b 11/04
U.S. Cl. 425—78 5 Claims



A system for providing for compensation for deflection during a compacting press operation. The system is operable in conjunction with a separate inner and outer ram arrangement so that immediately after press operation and throughout the press eject operation there is provided a preloading of the

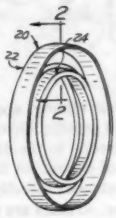
inner ram upwardly in supporting relationship to the part. A predetermined space is provided between the inner and outer rams. The particular space adjustment means provided for deflection compensation also permits adjustment where it is necessary to provide overfill or underfill where these conditions are required.

3,733,155

APPARATUS FOR MAKING AN ELASTOMERIC ANNULAR SEAL WITH ENCLOSED GARTER SPRING

Michael J. Burke, Southfield, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Division of Ser. No. 982, Jan. 6, 1970, Pat. No. 3,666,852. This application Apr. 1, 1971, Ser. No. 130,223
Int. Cl. B29c *27/30*
U.S. Cl. 425—128 **3 Claims**



A mold assembly including an externally-tapered lower core member with an annular garter-spring-holding groove near its smaller-diameter top and an annular shoulder and seat near its larger-diameter bottom and an internally-tapered upper cavity mold member cooperatively form an annular die cavity having the shape desired for the elastomeric annular seal to be formed therein. Prior to molding the seal, the upper cavity mold member is retracted and moved out of alignment with the core member and replaced temporarily by a cylindrical loading device having an annular groove for receiving a pretensioned annular hollow helical tension spring and below it a cylindrical end portion adapted to receive an annular charge of elastomer. In carrying out the method of this invention, an annular mounting case is placed on the seat and a collar on the loading device is moved downward so as to push the spring and the annular elastomeric charge from the loading device onto the core member until the spring snaps into the annular groove of the core-member. The loading device is then retracted and moved out of alignment with the core member and the mold cavity member moved into alignment therewith and then moved downward into telescoping relationship with the core member, moving the spring downward out of the annular core groove and at the same time expanding it by circumferentially stretching it to open up spaces between its convolutions.

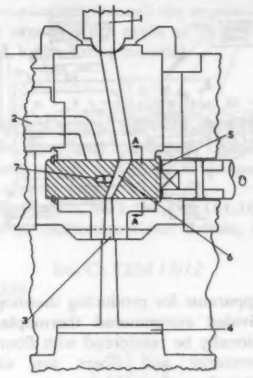
As the spring is pushed downward, it pushes the elastomeric charge ahead of it into the mold chamber which shapes the seal and totally encloses the spring therein. Excess elastomer is ejected upward through the clearance between the mold and core members. Simultaneously therewith, the elastomer is pushed between the now-spaced convolutions of the expanded spring into the hollow of the spring, completely and uniformly filling it with elastomer. The upper mold cavity is then moved downward to the end of its stroke and an annular nose portion thereof cooperates with the shoulder as a fulcrum to bend the periphery of the case upward into a frusto-conical flange which enters the mold chamber and becomes bonded to elastomer flowing against its opposite sides. The end of the stroke ordinarily cuts off any flash adhering to the upper end of the seal, forming a sharp sealing lip thereon. The elastomer of the seal is then cured in the mold cavity by heating the mold assembly, after which the completed seal is ejected from the core member by a conventional stripper as the mold cavity member is retracted upward.

3,733,156

INJECTION MOULDING MACHINES

Paul Johnson Garner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, Millbank, London, England

Division of Ser. No. 781,763, Dec. 6, 1968, Pat. No. 3,599,290. This application Apr. 12, 1971, Ser. No. 132,971
Int. Cl. B29f *1/022*
U.S. Cl. 425—132 **8 Claims**



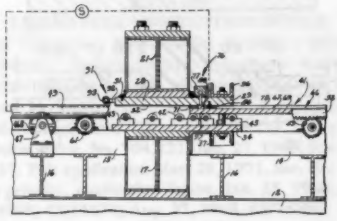
There is provided apparatus for moulding laminar articles. Two screw-injection barrels are arranged to sequentially pass resinous materials through a valve, in the fixed platen of an injection moulding machine or in the walls of the mould cavity, in a single sprue into the mould cavity. Control means are provided to control the valve so that material from one screw-injection barrel does not pass while material flows from the other screw-injection barrel. The control means is synchronized so that the desired quantities of materials from two injection barrels are placed in the mould cavity.

3,733,157

APPARATUS FOR MOLDING PLASTIC SHEET

James W. Hendry, Helena, Ohio, assignor to Sund-Borg Machines Corporation, Fremont, Ohio

Continuation of Ser. No. 708,965, Feb. 28, 1968, abandoned. This application Aug. 3, 1970, Ser. No. 64,143
Int. Cl. B29d *7/02*
U.S. Cl. 425—149 **12 Claims**

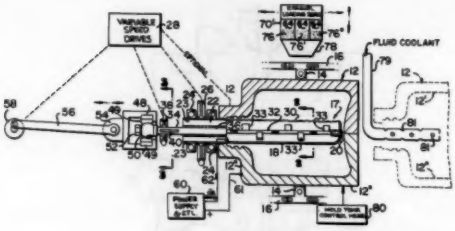


An apparatus for forming large surface area plastic sheets inside of a mold by introducing plastic from an injection molding machine, an extruder or other source of moldable plastic material, through a feed member positioned adjacent the mold. The feed member and the mold are relatively movable with respect to each other to progressively fill the mold cavity through a selected length thereof.

3,733,158
ELECTROSTATIC MOLDING APPARATUS FOR PREPARING THERMOPLASTIC ARTICLES

Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

3,478,387. This application June 2, 1969, Ser. No. 855,790
Int. Cl. B29c 5/04
U.S. Cl. 425—174 3 Claims

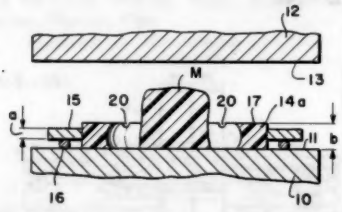


A molding apparatus for producing thermoplastic articles from finely divided comminuted thermoplastic materials which may optionally be reinforced with fibers wherein the comminuted material and fibers are electrostatically deposited on the surface of a mold.

3,733,159
APPARATUS FOR MANUFACTURE OF VOID-FREE AND WARP-FREE SLAB STOCK

Paul M. Coffman, Cherry Hill, N.J., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 857,176, Sept. 11, 1969, Pat. No. 3,608,508, which is a continuation-in-part of Ser. No. 633,673, April 19, 1967, abandoned, which is a continuation-in-part of Ser. No. 524,743, Feb. 3, 1966, abandoned. This application Aug. 5, 1971, Ser. No. 169,422
Int. Cl. B29c 3/00
U.S. Cl. 425—186 4 Claims

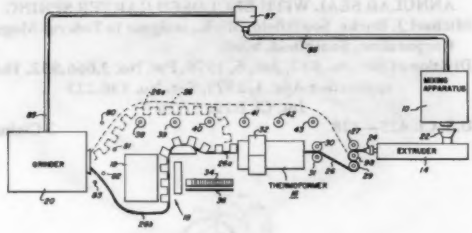


Void-free slabs or billets of thermoplastic polymer are produced by cooling polymer melt in a mold under pressure while keeping part of the melt in contact with a heat-insulating deformable surface of the mold cavity. Apparatus of this invention comprises a mold having two parallel rigid planar surfaces, a deformable heat-insulating ring placed between said planar surfaces, stiffening or backing means to maintain the shape of the outer wall of the ring, and pressure means for controllable changing the distance between said surfaces.

3,733,160
MATERIAL HANDLING SYSTEM FOR PLASTIC FILM MOLDING APPARATUS

Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.

Filed Mar. 18, 1971, Ser. No. 125,471
Int. Cl. B29c 29/00
U.S. Cl. 425—217 7 Claims

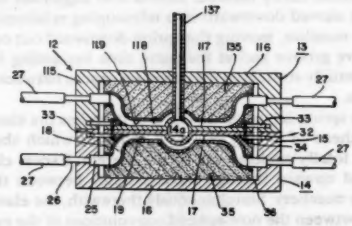


The system includes mixing apparatus, extruder, thermoformer, trimmer and grinder. Ground plastic from the mixing apparatus is fed directly to the extruder which provides a thin, continuous film of plastic. In the direct feed mode this film moves from the extruder directly into the thermoformer and then to the trimmer. Articles are formed in the film by the thermoformer and are cut from the film by the trimmer to leave a skeletal film which is fed directly into the grinder. In the bypass feed mode, film from the extruder or from the thermoformer is fed directly into the grinder. Novel mixing apparatus is disclosed for mixing plastics of different bulk densities, such as ground film from the thermoformer, extruder and trimmer. Also, novel cutting apparatus is disclosed which reduces noise and overloading problems.

3,733,161
STRUCTURIZER MOLD

Frank J. Nussbaum, New York, N.Y., assignor to Bischoff Chemical Corporation, Hicksville, N.Y.

Continuation-in-part of Ser. No. 884,956, Dec. 15, 1969, abandoned, which is a continuation-in-part of Ser. No. 752,518, Aug. 14, 1968, Pat. No. 3,671,168. This application Sept. 15, 1972, Ser. No. 289,655
Int. Cl. B29f 1/00; B22d 27/04
U.S. Cl. 425—243 3 Claims



Each of the two sections of a separable mold for a giant plastic article includes a box having a contoured wall as one end face. The giant article is molded in the cavity defined by the pair of contoured walls. Each contoured wall is thin, heat conductive, and of low specific heat. A plurality of conduits on the rear face of each contoured wall direct the flow of heat transfer fluid to regulate the temperature of a zone of the contoured wall. A relatively high density cellular polyurethane serves as an insulating foundation between the rear face of a contoured wall and the plate of the box and also provides support for the contoured wall. A relatively thin layer of silicone

rubber or like material is provided between the cellular polyurethane and each contoured wall. The contoured wall can undergo thermal expansion or contraction throughout or in selected zones without losing its bond to such cellular foundation. Floating connectors associate the contoured walls with frame members of the box, whereby relative thermal expansion of the box independently of the contoured wall is possible.

3,733,162

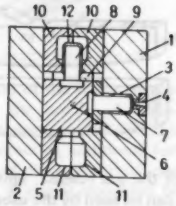
INJECTION MOULDING TOOL

Francis Farkas, c/o Clearplass Containers Ltd., P.O. Box 241, Phelps, N.Y.

Filed June 19, 1970, Ser. No. 47,841

Int. Cl. B29d *23/03*

U.S. Cl. 425—249 **8 Claims**



A plastic moulding apparatus in which a core-carrier head is arranged between the counter-moulding plate and the nozzle moulding plate, the said carrier-head being pivotable through 90° about an axis perpendicular to the direction of closing of the moulding plates; in the blowing-mould halves adapted to each other are seated on the moulding plates, the mould halves accepting the core in the pivoted position and swinging out of the injection-moulding position when the moulding plates are in the closed position, the core being equipped with a blowing nozzle.

3,733,163

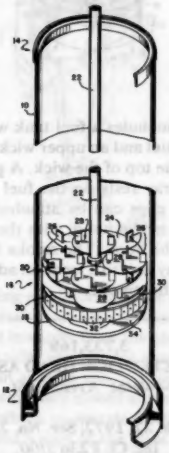
WEAR SURFACE FOR CONCRETE PIPE MACHINE LONG BOTTOMS

Lorin E. Hermann, Sioux City, Iowa, assignor to Concrete Pipe Machinery Company, Sioux City, Iowa

Filed Sept. 1, 1970, Ser. No. 68,703

Int. Cl. B28b *21/26*

U.S. Cl. 425—262 **9 Claims**



An improved wear surface for long bottoms employed in concrete pipe making machines utilizing the packerhead method of pipe formation wherein the base, or long bottom, of the packerhead includes a plurality of wear segments about the upper circumferential outer surface thereof, each easily removable for replacement after wear. Each segment may be 3.1416 inches wide so that if the diameter of the long bottom is a whole number, measured in inches, an easily determinable number of segments may be used to completely skirt the long bottom for wear purposes. Since the circumference of a circle equals π times the diameter, and π equals 3.1416, each 1 inch increase in diameter of the long bottom calls for one additional segment. Each segment is secured to the long bottom by a single bolt, countersunk through the segment wear surface. Preferably, the segments are made of cast Nihard steel, or some other hard, long wearing material.

3,733,164

POROUS MEDIA TUNNEL BURNER

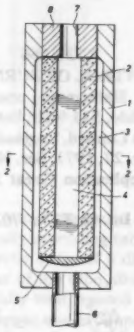
Donald Westlake, Fleet, and Kenneth F. Coles, Farnborough, both of England, assignors to Shell Oil Company, New York, N.Y.

Filed July 9, 1971, Ser. No. 161,109

Claims priority, application Great Britain, July 13, 1970, 33,835/70

Int. Cl. F23d *13/12*

U.S. Cl. 431—328 **8 Claims**



A porous media burner comprises an outer casing of impermeable material separated by a gas distributing space from an inner hollow core, open at one end, of a porous medium. The fuel mixture enters the gas distributing space between the casing and the core and then passes through the core to the hollow space of the core.

3,733,165

LIQUID FUEL COMBUSTION DEVICE

Masayoshi Nakagawa, Nishinomiya; Toshihiro Hirai, Sakai; Yuji Suzuki, Amagasaki-shi; Ryozaburo Kimura, and Masamichi Okahara, both of Takarazuka, all of Japan, assignors to Daido Sans Kabushiki Kaisha, Osaka-shi, Minami-ku, Unagidani-Nakano-cho, Banchi, Japan

Division of Ser. No. 794,221, Jan. 27, 1969, Pat. No. 3,610,537. This application Mar. 29, 1971, Ser. No. 128,937

Claims priority, application Japan, Jan. 25, 1968, 43/4712; Feb. 23, 1968, 43/11674; Aug. 27, 1968, 43/74096

Int. Cl. F23l *7/00*

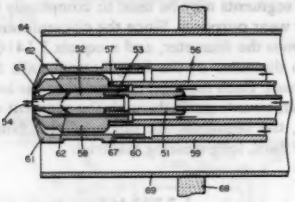
U.S. Cl. 431—10 **4 Claims**

Through a combination of

a. the supply of oxygen substantially in the form of pure oxygen in an amount far less than that theoretically required for combustion of liquid fuel to be burned in such a manner as to attain a very rapid combustion temperature rise,

b. with the strong activation of the liquid fuel by mixing and atomization of a part of the fuel liquid sufficiently with

the oxygen, limited in quantity, closely adjacent to a liquid fuel nozzle thereby to form a high-temperature center flame very close to the nozzle.



c. a high-temperature flame having a large potential heat per unit volume thereof, that is, a flame of extremely high intensity, is obtained efficiently with a small supply of oxygen.

3,733,166

CONTROL OF BURNERS

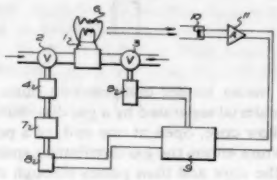
Joshua Swithenbank, Hathersage, near Sheffield, and David Shaw Taylor, Sheffield, S11 9AU, both of England, assignors to Land Pyrometers Limited, England

Filed Apr. 27, 1971, Ser. No. 137,864

Claims priority, application Great Britain, May 6, 1970, 21,761/70

Int. Cl. F23n *1/02*

U.S. Cl. 431—76 **9 Claims**



The control of the reactant flow ratio to a burner is effected by applying determined fluctuations to the flow of one reactant to the burner, detecting radiation from the flame from the burner, correlating the fluctuations in the radiation with the applied fluctuations, and utilizing the polarity of the correlation to effect the appropriate adjustment of the reactant flow ratio to the burner.

3,733,167

GAS-FUELED LIGHTERS

Robert Raymond Hocq, Boulogne-Billancourt, France, assignor to Societe Franco-Hispano-Americaine (Francispam), Saint Gratin (Vald'Oise), France

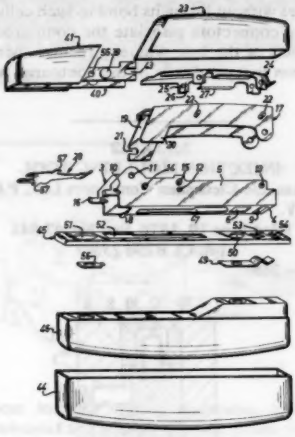
Filed Feb. 21, 1971, Ser. No. 136,091

Claims priority, application France, Apr. 24, 1970, 7014982

Int. Cl. F23q *2/00*

U.S. Cl. 431—143 **16 Claims**

The invention relates to a gas-fueled lighter in which the outer covering or sheath is segregated from any mechanical functions, so that after the lighter has been assembled, no



mechanical part of the gas release, ignition mechanism, and filling mechanism can be seen by the user.

3,733,168

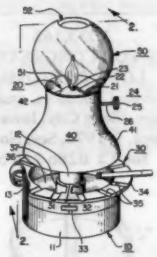
SMOKE DISSIPATING ASHTRAY LAMP

Milton M. Marsh, 11130 South Parnell, Chicago, Ill., and Robert A. Marsh, 4948 W. 78th Street, Oak Lawn, Ill.

Continuation-in-part of Ser. No. 795,927, Feb. 3, 1969, abandoned. This application Mar. 24, 1970, Ser. No. 22,335

Int. Cl. F23d *3/02*

U.S. Cl. 431—253 **2 Claims**



A lamp assembly includes a fuel tank with a lower portion for enclosing liquid fuel and an upper wick guide portion, with a burner affixed to the top of the wick. A globe extends above the burner. An ashtray rests on the fuel tank, or individual cigarette-supporting clips can be attached to a smoke hood just below apertures in the hood, with the ashtray positioned on the table within the hood. The smoke hood directs smoke rising from the ashtray unit to a location adjacent the flame for virtual dissipation of the smoke.

3,733,169

FLAME RETENTION HEAD ASSEMBLY

Denis Lefebvre, 150-44ieme Avenue, St. Eustache, Quebec, Canada

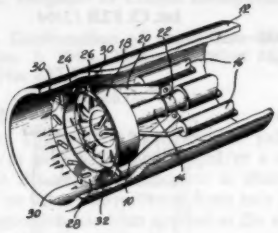
Filed Feb. 22, 1972, Ser. No. 227,843

Int. Cl. F23q *3/00*

U.S. Cl. 431—265 **5 Claims**

A flame retention head assembly for use in the air tube of a fuel burner having a fuel nozzle and ignition means for igniting

the burner. The head assembly comprises a cylindrical ring positioned coaxially in the air tube and secured to the fuel nozzle. A spinner plate is secured inside the cylindrical ring adjacent the rear end of the ring and such plate is provided with a central opening facing the fuel nozzle. Vanes are formed in the spinner plate around the opening therein so as to impart a swinging motion to the air stream passing through the cylindrical ring thus causing a turbulence in the air stream

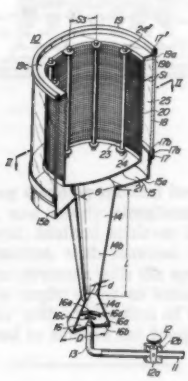


to improve combustion of the flame produced by ignition of the fuel emitted by the nozzle. A cone-shaped flange is secured to the front part of the cylindrical ring and has openings therein for creating additional turbulence in the air stream at the outlet of the cylindrical ring to improve fuel combustion. Finally, a gap is provided between the cone-shaped flange and the air tube to permit flow of air at high velocity creating an overlapping air stream permitting to control the flame pattern.

3,733,170
GAS BURNER

Ikuo Kobayashi, Nara; Takao Tomizawa, Yamatokoriyama, and Shigeo Murase, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Osaka, Japan

Filed May 21, 1971, Ser. No. 145,863
Claims priority, application Japan, May 27, 1970, 45/52609
Int. Cl. F23d *13/14*
U.S. Cl. 431—329 **13 Claims**

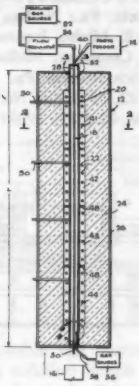


A gas burner having a cylindrical glass member and a cylindrical screen of metal wires having closed bottom end and disposed and spaced inwardly from the glass member to define therebetween an annular gas passage space which is closed at the top thereof by an annular cap. The space enclosed by the glass member is substantially closed at the lower end by an annular bottom wall which cooperates with the closed bottom end of the screen and a part of the glass member to define a mixing chamber which is in communication with air-fuel mixture supply source and the annular gas passage space whereby the mixture is fed from the supply source through the mixing chamber to the cylindrical screen through which the mixture is passed inwardly and burnt to form combustion flames on the inner surface of the screen. Heat catalystic members are disposed inwardly of the cylindrical screen to facilitate complete combustion of the fuel.

3,733,171
APPARATUS AND METHOD FOR FIRING MAGNETIC CORES

Robert J. Sisolak, Edison, N.J., and Jack R. Bryant, Palos Verdes Peninsula, Calif., assignors to Electronic Memories & Magnetics, Los Angeles, Calif.

Filed Apr. 21, 1971, Ser. No. 135,980
Int. Cl. F27b *5/00*
U.S. Cl. 432—17 **11 Claims**

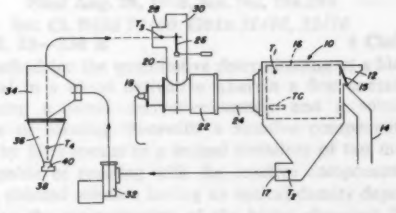


A kiln for sintering small magnetic cores or other parts, which includes a vertically extending tube that is heated along a center section. Magnetic cores of a diameter much smaller than the inside diameter of the tube, drop in free fall through the tube and emerge fully heat treated at the lower end. An additional inlet at the upper end is connected to a pressurized gas source to pump air, oxygen, or other gas at a controlled rate through the tube to control the speed at which the cores move through the tube. An additional gas inlet is connected immediately above the lower end of the tube for receiving cooling gases to cool the cores in a controlled atmosphere prior to emergence at the lower end of the tube.

3,733,172
METHOD AND APPARATUS FOR AUTOMATIC CLEANING OF COFFEE ROASTERS

John W. Angstadt, Williamsville, N.Y., assignor to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.

Filed Nov. 9 1970, Ser. No. 87,790
Int. Cl. F27b *3/10*
U.S. Cl. 432—41 **3 Claims**



The presence of oils, tars, steam and chaff in the recirculating gases of high-velocity, low-temperature coffee roasters

requires frequent shut-downs for mechanical cleaning purposes. With associated cooling-off and heating-up periods, the production loss is significant. The present invention provides means for periodically cutting off the flow of beans to the roaster and heating the gas recirculation portions to the ignition temperature of the deposited by-products (a temperature of from about 500° to 800°F., depending on whether the by-products are light and fluffy or baked on like varnish). After combustion is complete, proper roasting temperatures and atmospheres are restored, and roasting is recommenced. In addition to minimizing down time, the invention more effectively cleans the roaster and prolongs equipment life by reducing metal fatigue resulting from thermal cycling.

3,733,173

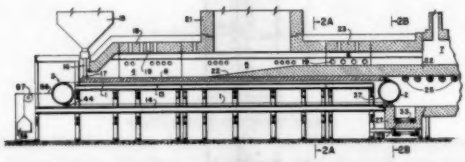
TOWER FURNACE COLLECTING MECHANISM

Michael Csapo, Wyncote, Pa.; Nathan Waldman, Midland, Mich., and William E. Micho, Ironton, Ohio, assignors to The Dow Chemical Company, Midland, Mich. and Selas Corporation of America, Dresher, Pa.

Filed Dec. 22, 1971, Ser. No. 210,706

Int. Cl. F27b *19/00*

U.S. Cl. 432—87 **7 Claims**



There is disclosed an endless conveyor belt for moving hot material from under a tower furnace, with the drive from the belt having provisions to compensate for changes in the length and the width of the belt due to expansion and contraction.

3,733,174

COVERED TYPE HEAT TREATMENT COMBUSTION FURNACE

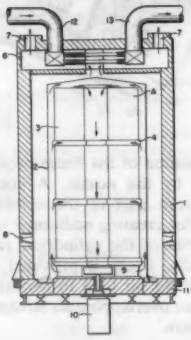
Hiromu Yoshimoto, Aichi, Japan, assignor to Daido Steel Co., Ltd., Azu-Kuridashi, Hoshizaki-cho, Minami-ku, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 10, 1971, Ser. No. 122,962

Claims priority, application Japan, Mar. 13, 1970, 45/20810

Int. Cl. F23l *15/04*

U.S. Cl. 432—199 **2 Claims**



A covered type heat treatment combustion furnace having a recuperative heat exchanger constructed as the roof of the furnace for preheating the combustion air.

CHEMICAL

3,733,175

HAIR DYE BLEND OF A YELLOW COMPONENT AND RED COMPONENTS AND/OR BLUE COMPONENTS

George Alperin, Stamford, and Socrates Vaniotis, Huntington, Conn., assignors to Clairol Incorporated, New York, N.Y.

No Drawing. Continuation of application Ser. No. 517,987, Jan. 3, 1966. This application May 23, 1969, Ser. No. 827,137

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.1 16 Claims

A hair dyeing composition containing a yellow dye component and/or a blue component and/or a red component in which the yellow component is changed, destroyed, leached or otherwise removed from hair to which said dyeing composition has been applied at the same rate as said red and/or blue components.

3,733,176

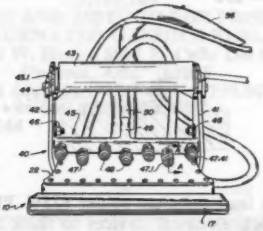
METHOD FOR CLEANING CARPETS AND LIKE MATERIALS

William H. Wisdom, 9806 Van Dyke Drive, Dallas, Tex. 75218

Continuation of abandoned application Ser. No. 795,767, Dec. 20, 1968, which is a division of application Ser. No. 638,890, May 16, 1967, now Patent No. 3,436,787. This application Dec. 28, 1970, Ser. No. 102,221

Int. Cl. A47l *7/00*

U.S. Cl. 8—149.1 7 Claims



A carpet and rug cleaning method involving successive rolling, spraying, and nearly simultaneous exposure to vacuum and to heat. Method achieves faster drying than heretofor was common, with minimal wicking. Pre-rolling, spraying under pressure with the spray impinging the carpet at an acute angle so as to loosen rather than to imbed soil together with application of the vacuum, pressure, and heat, used to achieve the foregoing.

3,733,177

METHODS AND COMPOSITIONS FOR THE DETERMINATION OF URIC ACID IN BLOOD

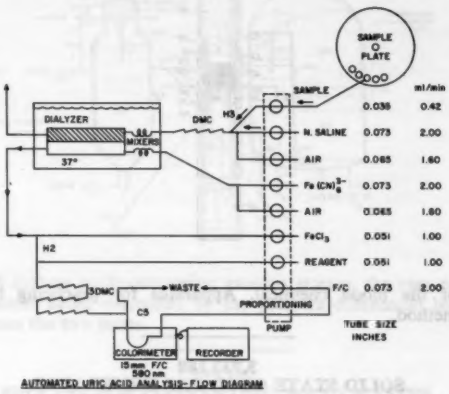
Bernard Klein, New Hyde Park, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 3, 1972, Ser. No. 214,770

Int. Cl. G01n *31/22*

U.S. Cl. 23—230 B 11 Claims

Colorimetric methods and compositions for the quantitative determination of the uric acid content of blood by treating blood serum at ambient temperatures with an alkaline ferricyanide solution, followed by the addition of ferric ions and a 5-(2-pyridyl)-2H-1,4-benzodiazepine or water soluble salt thereof to produce a brilliant purple colored solution which is then quantitatively measured by standard colorimetric means.



AUTOMATED URIC ACID ANALYSIS-FLOW DIAGRAM

3,733,178

CHEMICAL CODING METHOD

Stuart P. Eriksen, Santa Ana, Calif., assignor to Allergan Pharmaceuticals, Irvine, Calif.

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,248

Int. Cl. G01n *31/22, 33/16*

U.S. Cl. 23—230 B 4 Claims

An internal labelling system for clinical laboratory specimens based upon the addition of known amounts of salts of the lanthanide and actinide series to specimen containers with subsequent analysis and simultaneous digital print-out of a code number uniquely associated with the sample.

3,733,179

METHOD AND APPARATUS FOR THE QUANTITATIVE DETERMINATION OF BLOOD CHEMICALS IN BLOOD DERIVATIVES

Paul F. Guehler, White Bear Lake Township, Ramsey County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

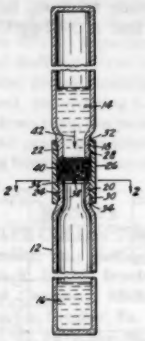
Filed Aug. 29, 1968, Ser. No. 756,098

Int. Cl. B65d *79/00*; G01n *31/02, 33/16*

U.S. Cl. 23—230 B 4 Claims

A method for the quantitative determination of a blood chemical in a blood derivative wherein a first container containing a blood derivative sample and a solution capable of forming therewith a reactive component is joined by filter means to a second container of test material capable of reacting with the reactive component to form a colored solution having an optical density dependent upon the concentration of the blood chemical. The contents of the compartments are combined by centri-

fuging the assembly. The optical density of the colored fluid is measured and is correlated with the concentration



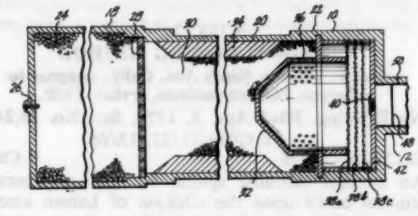
of the blood chemical. Apparatus for practicing this method.

3,733,180

SOLID STATE COOL GAS GENERATOR

Joseph B. Heineck, Everett, and James J. Schwab, Kent, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 8, 1971, Ser. No. 104,889
Int. Cl. B01j 7/00; B05b 1/00; B60r 21/00
U.S. Cl. 23—281 **1 Claim**



An emergency system which generates cool gases for pneumatic or pressurization systems, and for inflating inflatable objects. Hot gases are generated by a solid propellant. The hot gases flow through a dissociated bed of solid endothermic material which is decomposed to generate cool gases mixing with and cooling the hot gases. The flow of gases within the dissociated bed is directed by a baffle located at the outlet to the bed. The cooled gases flow via a variable area nozzle and into a gas receiver if used for pneumatic, pressurization or similar systems, or through an aspirator and into an inflatable device to be inflated.

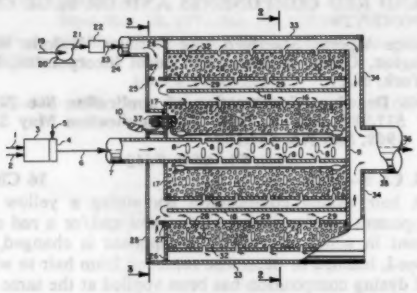
3,733,181

CATALYTIC EXHAUST GAS TREATMENT APPARATUS

John F. Tourtellotte, Westfield, and John F. Villiers-Fisher, Kendall Park, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed May 14, 1971, Ser. No. 143,401
Int. Cl. F01n 3/14; B01j 9/04
U.S. Cl. 23—288 F **25 Claims**

An apparatus for catalytically treating the exhaust gas from an engine, so as to eliminate noxious components in the exhaust gas. The apparatus features concentric cylindrical inner and outer catalyst beds, means to pass the engine exhaust gas radially outwards through the beds, and means to inject air into the exhaust gas between the inner and the outer bed, so that catalytic reduction of



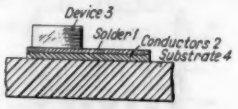
nitrogen oxides to nitrogen takes place in the inner bed and catalytic oxidation of hydrocarbons and carbon monoxide to water vapor and carbon dioxide takes place in the outer bed.

3,733,182

THICK FILM CIRCUITS

William Alden Crossland and Colin Andrew Marr, Harlow, and Laurence Hailes, Ware, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,660
Claims priority, application Great Britain, Feb. 6, 1970, 5,824/70
Int. Cl. B32b 15/04
U.S. Cl. 29—195 **2 Claims**



A tin-free lead cadmium solder (75% Pb, 25% Cd) is used to attach electrical devices to thick film palladium conductors. The use of this tin-free solder results in smaller loss of adhesion of the palladium to a substrate upon aging and at elevated temperatures.

3,733,183

LOW SULPHUR FUEL SYSTEM UTILIZING COAL CHAR, AND COPRODUCTS THEREOF

Alamjit D. Singh, 4015 N. Whipple St., Chicago, Ill. 60618

Continuation-in-part of application Ser. No. 801,460, Feb. 24, 1969, which is a continuation-in-part of application Ser. No. 415,603, Dec. 3, 1964. This application Aug. 24, 1970, Ser. No. 66,337
Int. Cl. C10l 5/00; C10g 1/00
U.S. Cl. 44—1 R **15 Claims**

In accordance with the disclosure of the present invention in one embodiment, coal in granular form is heated and introduced under pressure into a coal devolatilizer forming a reaction chamber for the coal and from which reaction by-products are separately withdrawn. Preheated oil is introduced under pressure into an oil fluid coker forming a reaction chamber for the oil, and from which oil reaction products are separately withdrawn. Granular residue from the coal devolatilizer and oil fluid coker are introduced under pressure into a heat generator in which further reaction takes place, there being means for effecting an interchange of material between the coal devolat-

ilizer and the heat generator, and between the oil fluid coker and the generator. The by-products from the oil fluid coker and from the coal devolatilizer are separately processed, and the desulphurized fuel components thereof are used with the carbonaceous product, which is a combined coal char and oil fluid coke, produced by the system; whereby to provide a low sulphur fuel system, and also elemental sulphur and other useful by-products which may be separately utilized. The use of the oil fluid coker is optional; and in one form of the invention the oil fluid coker vessel is used as a further processing vessel for desulphurizing the coal, into which hydrogen is introduced to further the desulphurization process.

3,733,184

COMPOSITION FOR IMPROVING AIR-FUEL RATIO DISTRIBUTION IN INTERNAL COMBUSTION ENGINES

Abraham A. Zimmerman, New Providence, Louis E. Furlong, Westfield, and Hugh F. Shannon, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,039
Int. Cl. C10l *1/16*
U.S. Cl. 44—80 **3 Claims**

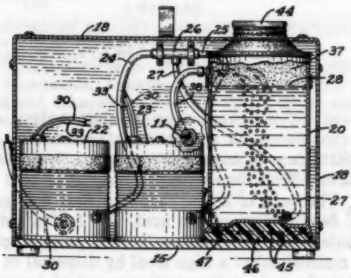
The distribution of the air-fuel mixture in the intake manifold of a multicylinder gasoline engine is improved by adding to the gasoline that is used as the fuel for that engine, a hydrocarbon wax that has at least 20 weight percent of normal paraffin hydrocarbons of at least 23 carbon atoms and not more than 10 weight percent of paraffinic hydrocarbons of more than about 36 carbon atoms. The concentration of the added wax in the gasoline is from about 2 to about 100 pounds per thousand barrels of gasoline, one barrel equalling 42 U.S. gallons.

3,733,185

APPARATUS AND METHOD FOR PRODUCING OXYGENATED GASEOUS FUELS

Richard W. Henes, 5901 E. Calle Del Sud, Phoenix, Ariz. 85018

Filed Apr. 19, 1971, Ser. No. 135,067
Int. Cl. C10j *1/08*
U.S. Cl. 48—144 **4 Claims**



Apparatus and method for producing oxygenated gaseous fuel wherein ambient air or oxygen is bubbled through a volatile liquid fuel entraining the fuel and conveying it to a combustor where it burns the vaporized fuel.

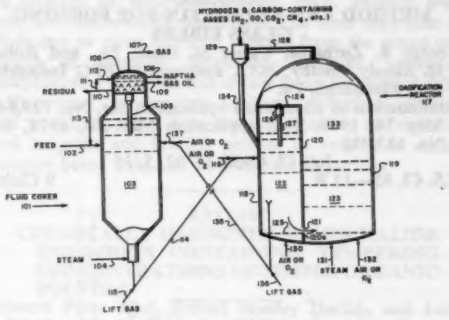
3,733,186

TWO-STEP CONTROLLED FLOW GASIFICATION PROCESS

Joseph F. Zemaitis, Jr., Morristown, N.J., assignor to Esso Research and Engineering Company

Filed Apr. 6, 1971, Ser. No. 131,728
Int. Cl. C10b *49/10*; C10j *3/00*
U.S. Cl. 48—202 **7 Claims**

In a single vessel reactor a heavy hydrocarbon fuel is stripped of valuable light hydrocarbons and heated to a temperature between 1100° and 1300° F. in a heating zone before a portion is transferred to a gasification zone to be substantially completely converted to a hydrogen



and carbon oxide-containing gaseous stream, the rate of transfer being controlled by the pressure differential between the two zones.

3,733,187

PROCESS FOR CONVERTING SOLID WASTES TO PIPELINE GAS

Herman F. Feldmann, Bethel Park, Pa., assignor to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed June 7, 1971, Ser. No. 150,754
Int. Cl. C10j *3/00*
U.S. Cl. 48—209 **20 Claims**

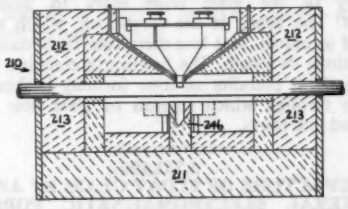
Solid wastes are heated to 500° C.–675° C. at 1000–3000 p.s.i.g. in presence of gas containing at least 90 mole percent hydrogen to convert said wastes to a methane- and ethane-containing gas having no condensable oils and tars. The carbonaceous residue is also free of tars and oils.

3,733,188

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of applications Ser. No. 779,684, Ser. No. 779,940, and Ser. No. 779,941, all Nov. 29, 1968, all now abandoned. This application May 4, 1971, Ser. No. 140,220
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 **15 Claims**



In the manufacture of glass fibers, molten glass is delivered from a melter-refiner to a two-stage continuous, non-pulsing pumping device which drags a high volume of bubble-containing viscous glass through a first stage at a relatively low shear rate supplying an excess of glass at a modest pressure increase to a second stage which drags a part of the viscous glass through it at substantially higher shear rates thus delivering substantially bubble-free molten glass at higher pressure to a working chamber, while the excess bubble-containing glass, unable to support shear, is

rejected from the pump and delivered to a refining chamber with the bubbles concentrated to assist their removal by heating.

3,733,189

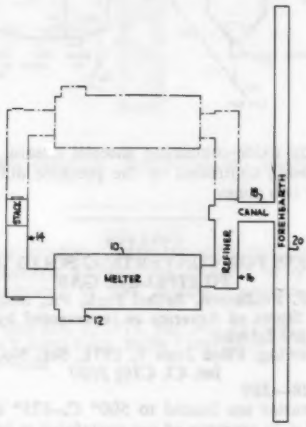
METHOD AND APPARATUS FOR FORMING GLASS FIBERS

George B. Zurheide, Upper St. Clair, Pa., and Robert G. Shealy, Shelby, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 729,044, May 14, 1968. This application Mar. 10, 1971, Ser. No. 123,022

Int. Cl. C03b *37/02, 5/16*

U.S. Cl. 65—11 R 9 Claims



Apparatus for manufacturing fiber glass includes a recuperator glass melter, a refiner and a forehearth. The stack for discharge of hot gases is spaced from the melter, providing a relatively long path for the hot gases. The refiner is separate from the melter and is relatively long and narrow, insuring substantially plug-flow therethrough. Molten glass from the melter is fed as a relatively thin stream over an inclined trough, so that it is exposed to the atmosphere thereabove and into a container with an opening therein through which the glass falls, as a spiraling stream onto any glass in the refiner. The refiner may be perpendicular to the center line of the melter. The glass flows from the refiner into a canal and then into a T-shaped forehearth which tapers in width from the canal to the ends to insure substantially uniform velocity of the glass from entry to terminal end thereof. The depth of the forehearth, which is well insulated to reduce heat loss therefrom is substantially uniform along its length. The forehearth contains, in its bottom walls, a plurality of fiber forming bushings having orifices through which streams of glass flow to be attenuated into fibers.

3,733,190

MANUFACTURE OF FLOAT GLASS BY APPLYING LATERAL ELECTROMAGNETIC FORCES TO THE EDGES

Jack Lawrenson, St. Helens, and Frederick William Silverwood, Appleby Bridge, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England

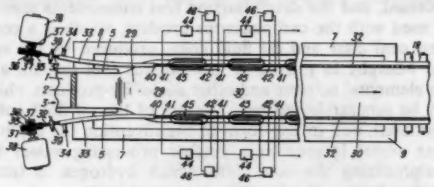
Filed Feb. 2, 1971, Ser. No. 111,905

Claims priority, application Great Britain, Mar. 9, 1970, 11,235/70

Int. Cl. C03b *18/02*

U.S. Cl. 65—91 20 Claims

The thickness of a float glass ribbon is regulated by electromagnetically applying transversely-directed forces to molten glass in ribbon form as it is advancing along a molten metal bath. The margins of the glass are provided with electrically conductive regions along which current



flow takes place, and each region is subjected to a magnetic field acting through the glass to produce said transversely-directed forces.

3,733,191

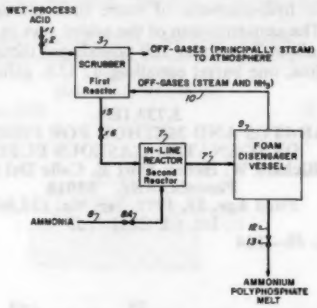
PROCESS FOR THE PRODUCTION OF AMMONIUM POLYPHOSPHATE

Robert S. Meline and Robert G. Lee, Florence, Ala., assignors to Tennessee Valley Authority

Continuation-in-part of application Ser. No. 833,936, June 17, 1969, which is a continuation-in-part of application Ser. No. 715,786, Mar. 25, 1968, both now abandoned. This application Feb. 13, 1970, Ser. No. 11,060

Int. Cl. C05b *7/00*

U.S. Cl. 71—34 5 Claims



AMMONIATION PROCESS WITH IN-LINE REACTOR FOR PRODUCTION OF SOLID AMMONIUM POLYPHOSPHATE

Process for the production of high-analysis solid and liquid (solutions and suspensions) ammonium polyphosphate fertilizers of high P_2O_5 polyphosphate and availability levels from wet-process phosphoric acid and ammonia. The acid is ammoniated so that fixation of ammonia, dehydration of the acid, and formation of polyphosphate occur simultaneously. The polyphosphate content is maintained at a high level by dispersal of the polyphosphate foam in a disengaging vessel of design to allow escape of free water entrapped in the foam prior to reduction in temperature and thereby preventing hydrolysis of the phosphate with the entrapped water.

3,733,192

PLANT FOODS

Frederick John Harris and John Stewart Raitt, Edinburgh, Scotland, assignors to Scottish Agricultural Industries Limited, Edinburgh, Scotland

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,908

Claims priority, application Great Britain, Mar. 28, 1968, 14,966/68; Mar. 14, 1969, 20,217/69

Int. Cl. A01n *21/02*

U.S. Cl. 71—77 20 Claims

A method of regulating the growth of plants in agriculture and horticulture is described which comprises treat-

ing the plants, seeds or the medium in which they are grown with hydrocarbon and substituted hydrocarbon phosphonic and phosphinic acids, amides, esters and salts, and analogous thio compounds, phosphine oxides and sulphides, and compositions containing the same. By selecting the appropriate application rate an increase in the yield can be obtained, e.g. grain yield of cereals and/or an increase in the protein content of the plant. The compounds can be applied in admixture with a diluent, surfactant, fertilizer or weedkiller.

3,733,193

RECOVERY OF VANADIUM FROM TITANIFEROUS IRON ORES

Joseph S. Fox, Lewiston, N.Y., and William H. Dresher, Upper Saddle River, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 22, 1970, Ser. No. 57,091
Int. Cl. C22b *55/00*
U.S. Cl. 75—1 **4 Claims**

A process for salt roasting a vanadium-containing titaniferous iron ore having at least a few percent of a silicious material calculated as SiO_2, comprising the addition of an aluminum bearing material to the ore, prior to roasting, in an amount ranging between about 2% and about 15% based on the weight of the ore, and wherein the roasting is carried out at a temperature not in excess of about 1350° C. for a time period between about ½ and about 2 hours so as to extract at least 70% of the vanadium values contained in said ore.

3,733,194

MERCURY GENERATION

Paolo Della Porta and Mauro Rebaudo, Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Original appplication Oct. 7, 1970, Ser. No. 78,839, now Patent No. 3,657,589. Divided and this application Jan. 18, 1972, Ser. No. 218,684
Claims priority, application Italy, Oct. 20, 1969, 23,582/69
Int. Cl. H01j *7/10, 7/18*
U.S. Cl. 75—.5 R **4 Claims**

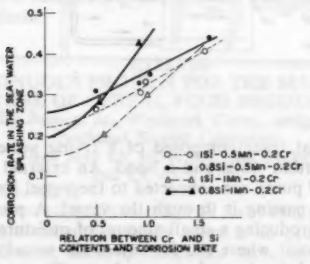
Mercury releasing compositions employing intermetallic compounds of mercury with zirconium and/or titanium such as Zr_3Hg and Ti_3Hg useful to charge electron tubes with mercury.

3,733,195

CORROSION RESISTANT STEELS HAVING IMPROVED WELDABILITY

Tadashi Nishi, Tuneyasu Watanabe, Haruo Shimada, Hiroki Masumoto, Takeshi Fujimoto, Kazuhiro Miida, and Takashi Okazaki, Kitakyushushi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 14, 1970, Ser. No. 2,695
Claims priority, application Japan, Jan. 16, 1969, 44/3,003; Feb. 28, 1969, 44/15,630
Int. Cl. C22c *39/54*
U.S. Cl. 75—125 **2 Claims**



RELATION BETWEEN Cr AND Si CONTENTS AND CORROSION RATE

A corrosion resistant steel having improved weldability consists of 0.001–0.30 percent carbon, 0.1–2.0 percent silicon, 0.3–2.0 percent manganese, 0.01–0.50 percent chromium, 0.1–0.29 percent copper, 0.0001–0.040 percent phosphorus, two or more elements selected from the group consisting of arsenic, beryllium, bismuth, lead, germanium, antimony, selenium and tellurium in an amount of 0.02–0.20 percent each, balance being iron and unavoidable impurities. The steel may also include one or more elements selected from the group consisting of titanium, zirconium, niobium, vanadium, molybdenum, tungsten and nickel in an amount of 0.01–0.50 percent in respect to titanium, zirconium, niobium and vanadium, 0.1–1.5 percent in respect to molybdenum and tungsten and 0.1–3.5 percent in respect to nickel, balance being iron and unavoidable impurities.

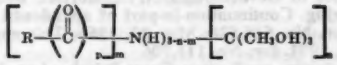
3,733,196

CHEMICALLY HARDENED SILVER HALIDE EMULSIONS CONTAINING TEMPERING CONCENTRATIONS OF SIMPLE ORGANIC POLYOLS

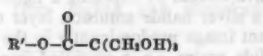
Edward Peter Abel, Robert Stanley Darlak, and Louis Morton Minsk, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,768
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **12 Claims**

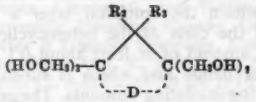
Photographic silver halide elements containing hydrophilic colloids are tempered by simple organic polyols having the formulae:

(I) 

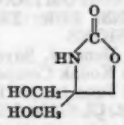
wherein R is phenyl or substituted phenyl, alkyl, substituted alkyl or alkenyl; p is 0 or 1; m is 0, 1 or 2; and n is 1 or 2; the sum of m and n being at most 3; or

(II) 

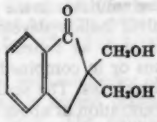
wherein R′ is alkyl, a hydrogen atom, an alkali metal or the atoms necessary to complete an ammonium salt group; or

(III) 

wherein D is the atoms needed to complete a 5 or 6 membered carbocyclic ring; and taken separately, R_2 is hydrogen and R_3 is hydroxy, or taken together R_2 with R_3 represents an oxo-group or

(IV) 

or

(V) 

Also disclosed are processes for effecting tempering of various layers comprising these polyols and polymeric latex dispersions.

3,733,197

PHOTOSENSITIVE COMPOSITION CONTAINING A HALOGENATED HYDROCARBON PHOTOACTIVATOR AND A SPIROTHIONAPTHOPYRAN, A SPIROCYCLOHEPTATRIENE, OR A SPIROTHIOBENZOPYRAN

Cajetan Schiele, Beihingen (Neckar), Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

No Drawing. Continuation-in-part of application Ser. No. 881,340, Dec. 1, 1969. This application Sept. 16, 1970, Ser. No. 72,848

Claims priority, application Germany, Nov. 29, 1968, P 18 11 620.6

Int. Cl. G03c 1/52, 5/24

U.S. Cl. 96—48 R 13 Claims

A composition of matter comprising spiro compounds held in a matrix substance and exhibiting stable color changes upon exposure to radiation of characteristic wavelength. The composition of matter is exposed to data-modulated light of such wavelength to provide permanent records of the data.

3,733,198

DIRECT POSITIVE PROCESSES UTILIZING SILVER HALIDE INTERNAL LATENT IMAGE EMULSIONS CONTAINING HIGH CONCENTRATION OF HETEROCYCLIC THIONE ANTIFOGGANTS

Gerard Laurens Vanreusel, Hove, Paul Desire Van Pee, Edegem, and Jules Maria De Laet, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Continuation-in-part of abandoned application Ser. No. 546,528, May 22, 1966. This application Feb. 1, 1971, Ser. No. 111,706

Claims priority, application Great Britain, Apr. 30, 1965, 18,335/65

Int. Cl. G03c 5/24

U.S. Cl. 96—64 21 Claims

In a known method of photographically producing direct positive images by exposing a light-sensitive material carrying a silver halide emulsion layer of the type forming a latent image predominantly in the inner part of the silver halide grains, i.e. a so-called internal image emulsion, treating the exposed material with a surface developer and overall exposing the material during this treatment to actinic light of low intensity, an image having minimum density and contrast is obtained by incorporating within the emulsion layer a fog-inhibiting compound of the class of the heterocyclic thione compounds in an amount of at least about 0.1 mole per 100 mole of silver halide and which is substantially larger than normal fog-inhibiting amounts. The concept can be applied to the formation of black and white images as well as to colored images.

3,733,199

PHOTOGRAPHIC COMPOSITION OF SODIUM AND POTASSIUM IONS FOR TREATING DIRECT POSITIVE EMULSIONS

Paul E. Crough and Henry J. Snyder, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 14, 1971, Ser. No. 152,978

Int. Cl. G03c 5/24

U.S. Cl. 96—64 13 Claims

A diffusion transfer process comprises developing an exposed direct positive emulsion in the presence of a silver halide solvent, a silver halide developing agent, a development restrainer such as benzotriazole and sodium and potassium as ions or in combined form e.g. as compounds, including complexes. The sodium and potassium are present in a concentration of about 8 to about 27 mole percent potassium and about 92 to about 73 mole percent sodium, based on the total moles of sodium and potassium of about 5 to about 30%, by weight, dry basis of total developing composition.

3,733,200

PRINTING PLATE

Shunji Takaishi, Tokyo, and Akira Kato, Yokohama, Japan, assignors to Hydron Chemical Co., Ltd., Tokyo, and Kansai Paint Co., Osaka, Japan

Filed Feb. 12, 1971, Ser. No. 114,887

Claims priority, application Japan, Feb. 19, 1970, 45/13,759

Int. Cl. G03c 1/94

U.S. Cl. 96—86 R 12 Claims

A printing plate is constituted a basic plate, a layer of water insoluble hydrophilic acrylate or methacrylate polymers over the plate and a photo-sensitive layer over the layer.

3,733,201

PHOTOGRAPHIC COMPOSITIONS AND ELEMENTS COMPRISING COUPLING COMPOUNDS WHICH ON DEVELOPMENT RELEASE SILVER HALIDE-COMPLEXING MATERIALS AND DYES

Charles Robert Barr, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,870

Int. Cl. G03c 1/40, 5/54, 7/00

U.S. Cl. 96—100 40 Claims

A novel class of selenium and tellurium organic ether photographic coupler compounds having utility in the color photographic area, such compounds containing a releasably linked organic radical attached at a coupling site by a divalent selenium or tellurium atom, photographic emulsions, developing compositions and photographic elements containing such compounds as well as a process for developing the exposed photographic elements.

3,733,202

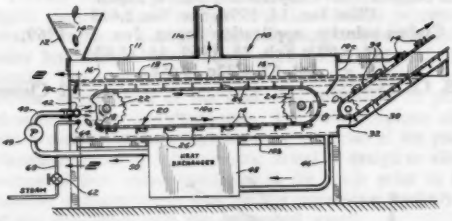
DEEP FAT FRYING PROCESS

Ralph A. Marmor, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of abandoned application Ser. No. 820,113, Apr. 29, 1969. This application Nov. 18, 1970, Ser. No. 90,772

Int. Cl. A23l 1/00; C09f 5/12

U.S. Cl. 99—1 6 Claims



A deep fat fryer composed of a frying vessel having side and bottom walls and a hood. An external heat exchanger and pump are connected to the vessel for heating the fat and passing it through the vessel. A provision is made for introducing a small amount of moisture into the fat at the point where the fat enters the vessel to distill off undesired fat breakdown products. The moisture is preferably introduced as steam through a manifold located at the inlet end of the frying vessel. As the steam

escapes, it carries away the products of fat degradation and at the same time fills the hood thus lessening oxidation that would otherwise occur on the surface of the fat.

3,733,203

AMMONIATED PHOSPHORIC ACID, MOLASSES, SULFATE FEED SUPPLEMENT FOR RUMINANTS

Donald M. Steen, Morrill, Nebr., assignor to Allied Chemical Corporation, Morris Township, N.J.

No Drawing. Continuation-in-part of application Ser. No. 484,460, Sept. 1, 1965. This application Mar. 5, 1970, Ser. No. 16,988

Int. Cl. A23k *1/22;* C05f *5/00;* C05c *9/00*

U.S. Cl. 99—2 ND 2 Claims

A feed supplement for ruminant animals comprising a supply of non-protein nitrogen, such as urea, a water-soluble sulfate and ammoniated phosphoric acid, providing a sulfur-nitrogen ratio of not more than 15 parts of nitrogen to 1 part of sulfur by weight. Pyrophosphate included in the feed acts as a sequestering agent upon the trace minerals therein. The feed may also contain vitamins, antibiotics, hormones and/or salt as desired. The described feed supplement provides a desired nutrition for animals, increasing their growth rate, health and digestive efficiency.

3,733,204

METHOD OF FEEDING CHITINOUS MEAL TO CRUSTACEA

Keir Charles Campbell, Carlton, near Goole, England, assignor to Ranks Hovis McDougall Limited, London, England

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,940

Claims priority, application Great Britain, Mar. 7, 1969, 12,272/69

Int. Cl. A23k *1/18*

U.S. Cl. 99—2 R 8 Claims

A method for the intensive farming of crustacea, e.g. prawns, in which, to increase survival rate, the growing crustacea are fed a prepared food composition comprising a chitinous meal. The chitinous meal may be a meal from the waste parts of crustacea, e.g. of crustacea previously reared by the same method, and is preferably provided in pellets containing also the other components of a balanced feed for the crustacea.

3,733,205

ENZYMATIC REMOVAL OF DIACETYL FROM FERMENTED BEVERAGES

John Shovers, Shorewood, Wis., and William E. Sandine, Corvallis, Oreg., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,193

Int. Cl. C12h *1/12;* C07g *7/02*

U.S. Cl. 99—48 6 Claims

A process for the enzymatic removal of diacetyl from beer and ale by the addition of diacetyl reductase and reduced nicotinamide adenine dinucleotide or combinations of whole bakers' or brewer's yeast with diacetyl reductase and reduced nicotinamide adenine dinucleotide which have been micro-encapsulated with gelatin or calcium alginate.

3,733,206

CONTINUOUS PROCESS FOR THE MANUFACTURE OF CEREAL FOOD PRODUCTS

Philip Jansen, Jr., Westport, Conn., assignor to National Biscuit Company

Filed July 13, 1970, Ser. No. 54,098

Int. Cl. A23l *1/10*

U.S. Cl. 99—80 R 13 Claims

Cooked cereal grain is rolled to form thin flakes which are compressed under heavy pressure to provide a continuous flowing sheet or sheet-like form of compressed cereal laminations. As the sheet advances on a continuously moving conveyor band it is first cut by a transversely reciprocating assembly of rotating disc cutters and subsequently cut into longitudinal strips by a second assembly of rotating disc cutters to form a continuously advancing sheet of rectangular shaped biscuits. The product is then baked and toasted to form a crunchy flaked biscuit which will maintain its crispness upon contact with aqueous liquids such as milk or cream.

3,733,207

PREPARATION OF A SOY PROTEIN FRACTION

Edward M. McCabe, Marysville, Ohio, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

No Drawing. Filed July 14, 1971, Ser. No. 162,654

Int. Cl. A23j *1/14;* A23l *1/00, 1/20*

U.S. Cl. 99—17 6 Claims

A protein fraction particularly suitable for incorporation in carbonated beverages is recovered from soy protein, by reaction of the soy with phytase, removal of matter insoluble at a pH of about 4.6 and recovery of the fraction insoluble at pH of about 5.0 to 5.4.

3,733,208

PRODUCTION OF BAKERY PRODUCTS

Shigehiko Sato, Osaka, and Saburo Yamatodani, Minoo, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed Feb. 5, 1970, Ser. No. 9,039

Claims priority, application Japan, Feb. 5, 1969, 44/8,514

Int. Cl. A21d *2/18*

U.S. Cl. 99—90 R 24 Claims

Uniform incorporation of microbial heteropolysaccharides comprising hexose and succinic acid produced by e.g. *Archromobacter lactolyticus* into doughs for bakery products enhances the stability of the doughs, makes the doughs susceptible to mechanical treatment with less trouble, significantly increases weight and specific volume of bakery products and also considerably prevents the bakery products from staling and retrogradation on storage.

3,733,209

CULINARY MIX FOR THE PREPARATION OF BAKED GOODS WITH IMPROVED MILK CHOCOLATE FLAVOR

Monoj K. Gupta, Cincinnati, and William M. James, Symmes Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,616

Int. Cl. A21d *2/00;* A23l *1/10*

U.S. Cl. 99—94 6 Claims

A prepared culinary mix for the preparation of milk chocolate flavored baked goods which includes sugar, flour, shortening, and other minor ingredients, and to which is added small amounts of non-fat dry milk solids or whey solids, cocoa, and either lactose, maltose, raffinose or galactose. The baked goods made from the above-mentioned culinary mix exhibit a desirable milk chocolate type flavor.

3,733,210

METHOD FOR MAKING LIQUID SHORTENING-CONTAINING CULINARY MIXES

Paul Selden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,765

Int. Cl. A21d *2/00*

U.S. Cl. 99—94 15 Claims

Flour is premixed with emulsifier and the premix which is free of shortening is passed between rollers to smear emulsifier on the flour. The emulsifier-coated flour is added to additional cake mix ingredients, including a liquid shortening, to provide a liquid shortening-containing culinary mix which does not have the usual disadvantages of liquid shortening-containing culinary mixes.

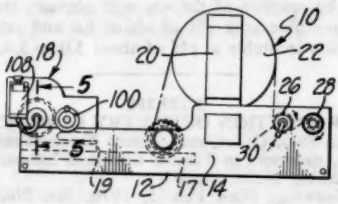
ERRATUM

For Class 106—178 see:
Patent No. 3,733,297

3,733,211
RIBBON-INKING METHOD

Frank R. Anderson and Albert J. Castro, Montebello, Calif., assignors to Westates Space-Era Products, Inc., El Monte, Calif.

Original application Oct. 27, 1969, Ser. No. 869,461. Divided and this application June 28, 1971, Ser. No. 157,769
Int. Cl. B23p *7/00*
U.S. Cl. 117—2 R 2 Claims

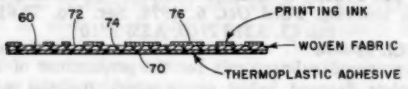


A used previously inked ribbon for which ink has been removed as a result of use can be effectively reinked so as to be capable of reuse by applying ink to a surface of the ribbon from a roller and then by subsequently ironing the ribbon. Such ironing involves applying heat to the ribbon while holding the ribbon under tension; preferably the ironing is followed by cooling the ribbon.

3,733,212
HEAT SEALABLE LABEL CARRYING AN INDELIBLE INK

Edward A. McCafferiy, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio

Filed Sept. 3, 1970, Ser. No. 69,420
Int. Cl. C09j *7/04*
U.S. Cl. 117—14 9 Claims



This disclosure includes a method and combination of apparatus for the manufacture of inked labels and the attachment of such labels to selected goods and an inked label as well as an ink composition particularly useful for the printing of inked labels. The aforestated label, ink composition, method and combination of apparatus making possible the efficient manufacture of labels directly at the point of attachment of such labels to respective goods.

3,733,213
ELECTROLESS PLATING OF PLASTICS AND FIBERS

George Jacob, Flourtown, Pa., assignor to Coppertech Inc., Flourtown, Pa.

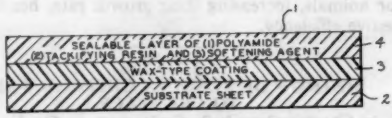
No Drawing. Filed Dec. 31, 1970, Ser. No. 103,296
Int. Cl. C23c *3/02*
U.S. Cl. 117—47 A 9 Claims

Nylon, Dacron or other fibers or fabric is plated by first degreasing the fabric with an organic solvent such as methyl ethyl ketone, the fabric is then immersed in a novel non-aqueous solution which simultaneously further degreases, cleans and wets, etches and initiates sensitization of the surface of the fabric fibers, the fabric is then rinsed after which it is deglazed by immersion in an oxidizing solution, rinsed, immersed in ammonia solution, treated in a novel sensitizing solution, activated in a novel activating solution, rinsed and plated in a novel nickel or copper plating solution. The fabric may be further plated by electroplating techniques.

3,733,214
PRESSURE SEALABLE PACKAGING FILM

Frank H. Stockhausen, Wauwatosa, Wis., assignor to Milprint, Inc., Milwaukee, Wis.

Filed July 19, 1971, Ser. No. 163,817
Int. Cl. B32b *23/08, 27/08*
U.S. Cl. 117—76 F 2 Claims



A packaging film formed of (1) a substrate sheet of flexible packaging material, (2) a tacky wax-type coating on a surface of the substrate sheet, and (3) a sealable layer covering the wax-type coating which comprises a mixture of a polyamide, a tackifying resin and a softener. The sealable layer of the foregoing composition is capable of forming seals for the production of packages from the film by the use of pressure alone at room temperature conditions.

3,733,215
SURFACE TREATMENT OF POLYESTER MATERIAL

August Jean Van Paesschen, Antwerp, and Lucien Janbaptist Van Gossum, Kontich, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed June 8, 1971, Ser. No. 151,131
Claims priority, application Great Britain, June 9, 1970, 27,979/70
Int. Cl. B32b *37/14;* B44d *5/04*
U.S. Cl. 117—138.8 F 4 Claims

To improve the adhesion to polyester surfaces of layers which are subsequently to be applied thereto, there is previously applied to the polyester surface a uniform layer of finely divided silca from an aqueous dispersion of silica particles containing chloral hydrate.

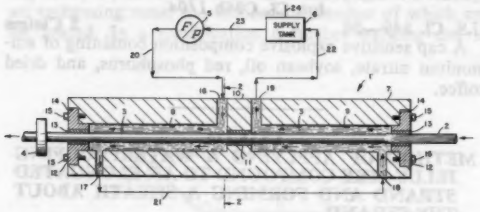
3,733,216
METHOD FOR IMPREGNATING STRANDED CABLE WITH WATERPROOFING COMPOUND

Ira Bernard Goldman, Levittown, Pa., and Charles Bean Heard, Jr., Lawrenceville, Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 19, 1971, Ser. No. 135,105
Int. Cl. B44d *1/16*
U.S. Cl. 117—231 6 Claims

Waterproofing compound at ambient or substantially ambient temperature, in the preferred embodiment, is continuously forced under pressure to flow through staged conduit surrounding stranded cable. Compound fills interstitial spaces between adjacent conductors in cable

and simultaneously exerts viscous drag force along the surface of the cable to propel, or otherwise control the



movement of, the cable. Wiping die subsequently removes excess compound from surface of cable.

3,733,217

METHOD OF MAKING INTERFERENCE FILTERS

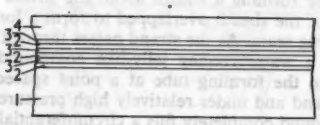
John Scott Seeley and Stanley Desmond Smith, Berkshire, and Frederick Stafford Ritchie, Newcastle-upon-Tyne, England, assignors to Sir Howard Grubb Parsons & Company Limited, Walkergate, Newcastle-upon-Tyne, England

Original application Sept. 16, 1969, Ser. No. 858,302, now Patent No. 3,614,188. Divided and this application July 28, 1971, Ser. No. 166,689

Claims priority, application Great Britain, Oct. 23, 1968, 50,381/68

Int. Cl. G02b 5/28

U.S. Cl. 117—33.3 2 Claims



A method of making an interference multi-layer filter for use with infra-red radiation, which includes the steps of depositing in vacuo on a substrate, selected from the group comprising germanium, silicon and crystal quartz, alternate layers of caesium iodide and a material of different refractive index selected from the group comprising germanium, silicon, tellurium and lead telluride. The substrate is heated to a temperature in the range of 130–230° C. and after deposition of the alternate layers the substrate is allowed to cool down to a temperature of 20° C. at a rate not exceeding 1° C. per minute before admitting air at ambient temperature into the vacuum chamber.

3,733,218

REMOVAL OF SOLDER FLUX WITH AZEOTROPIC SOLVENT MIXTURES

Cary A. Begun, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Nov. 15, 1971, Ser. No. 198,776

Int. Cl. B08b 7/00; B01f 1/00

U.S. Cl. 134—38 9 Claims

Azeotropic mixtures of trichloroethylene/isobutanol, perchlorethylene/cyclopentanol, perchlorethylene/ethylene glycol monoethyl ether or perchlorethylene/n-amyl alcohol are used to remove the residual rosin-based solder flux from soldered printed circuit boards.

3,733,219

LOW IMPACT ENERGY ELECTROCHEMICAL CELLS AND BATTERIES

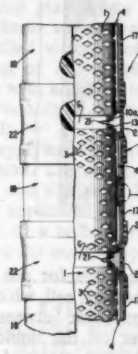
Jean-Pierre Courtot, Pantin, France, assignor to Societe des Accummulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Filed Feb. 22, 1971, Ser. No. 117,433

Claims priority, application France, Feb. 27, 1970, 7007205

Int. Cl. H01m 35/16, 5/00

U.S. Cl. 136—13 3 Claims



Electrochemical cells and batteries of low collision impact energy for use in high altitude testing equipment such as sounding balloons to reduce to the negligible the danger of impact damage to aircraft colliding therewith. Individual cells include flexible bands of opposite polarity electrodes, interposed separators and electrolyte all enclosed in a flexible sealed envelope with leads from the respective opposite polarity electrodes projecting in sealed relationship from the envelope. Each envelope with its contents is wrapped around a rigid tubular grid structure of small mass and having small meshes. The envelope is secured in place on the grid structure by flexible reinforced tape. Groups of such individual cells are positioned in axial spaced-apart alignment with appropriate long lead interconnection of cell terminals to form a battery. Adjacent cells are maintained together in assembled relationship with gaps between adjacent cells by reinforced flexible tape bindings.

3,733,220

WATER ACTIVATED LEAD-ACID BATTERY HAVING DRIED, DISCHARGED ELECTRODES

Nicholas J. Cortese, Racine, Wis., and James E. Bell, Fairview Park, Ohio, assignors to ESB Incorporated

Filed Mar. 3, 1971, Ser. No. 120,426

Int. Cl. H01m 39/00

U.S. Cl. 136—26 4 Claims

A lead-acid battery is produced by: charging the electrodes to a state of substantially full charge in a formation tank; discharging the electrodes to a state of substantially complete discharge in the formation tank; drying the electrodes; assembling the dried, discharged electrodes into elements; coating the exposed areas of elemental lead in the element, particularly the surfaces of the positive connective strap, with a non-oxidizing material or, alternatively, oxidizing those exposed areas of elemental lead with an oxidizing agent; and, placing the element into a battery container. Enough $PbSO_4$ may be contained in the dry, discharged electrodes so that the battery can be activated by the addition of water.

3,733,221

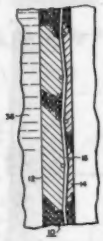
GAS DIFFUSION ELECTRODE

Yehuda L. Sandler, Pittsburgh, and Docile D. Durigon, Irwin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 776,636, Nov. 18, 1968. This application Jan. 27, 1971, Ser. No. 110,126

Int. Cl. H01m *13/00*

U.S. Cl. 136—120 FC 4 Claims



A gas diffusion electrode for use with a liquid electrolyte in an electrochemical cell, which electrode includes a porous electrical conductor between two porous layers. The first porous layer on the liquid electrolyte side is composed of a conducting material and a binder. The second layer of a thickness of from 3 to 7 mils is on the gas side and contains a conducting material, a binder, and a catalyst; and it is less than about one-half as thick as the first layer and more hydrophobic, whereby gas diffusion rates are optimized and the catalyst is employed in a highly efficient manner.

3,733,222

METHOD OF REMOVING INVERSION LAYERS FROM SEMICONDUCTOR BODIES OF P-TYPE CONDUCTIVITY

Hans-Peter Schiller, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 22, 1970, Ser. No. 74,261

Claims priority, application Germany, Sept. 27, 1969, P 19 48 884.7

Int. Cl. H01l *7/00*

U.S. Cl. 148—1.5 5 Claims

A method of removing inversion layers from the surface of high resistance semiconductor regions of p-type conductivity which border, in a semiconductor body, on a semiconductor region of n-type conductivity and are covered with an oxide masking layer. The method essentially comprises irradiating the semiconductor body with neutrons.

3,733,223

NEAR INFRARED ILLUMINATING COMPOSITION

Carl W. Lohkamp, Bloomfield, Ind., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed May 22, 1972, Ser. No. 255,333

Int. Cl. C06d *1/10*

U.S. Cl. 149—19 4 Claims

An illuminating composition which, upon burning, produces infrared radiation in the 0.74–1.2 micron region of the spectrum. The produced radiation can be utilized to produce irradiance upon a target to improve the range and resolution of a night viewing device. The composition is comprised of silicon, hexamethylenetetramine, an epoxy binder, and an alkali metal nitrate selected from the group consisting of potassium nitrate, cesium nitrate and rubidium nitrate.

3,733,224

EXPLOSIVE COMPOSITION CONTAINING PHOSPHORUS AND PARTICULATE COFFEE

G. Farlan Floyd, Rte. 1, Temple, Ga. 30179

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,539

Int. Cl. C06b *1/04*

U.S. Cl. 149—30 2 Claims

A cap sensitive explosive composition consisting of ammonium nitrate, soybean oil, red phosphorus, and dried coffee.

3,733,225

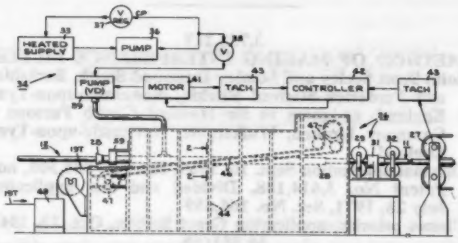
METHOD OF APPLYING A WATERPROOFING JELLY-LIKE COMPOUND TO AN ELONGATED STRAND AND FORMING A SHEATH ABOUT THE STRAND

Larry D. Moody, Ralston, Nebr., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,837

Int. Cl. H01b *13/16, 13/26*

U.S. Cl. 156—48 2 Claims



An elongated strand, such as cable core assembly, is advanced longitudinally through a forming tube of apparatus for forming a sheath about the strand with edge portions of the sheath overlapped to form a longitudinally extending seam. As the strand passes through the forming tube a waterproofing jelly-like compound is introduced into the forming tube at a point spaced from its entrance end and under relatively high pressure such that the compound completely fills a circumferentially extending portion of the space between the strand and the forming tube to produce a waterproof layer of the compound which encircles the strand and which provides a smooth cylindrical support surface about which the sheath can be formed in tight-fitting relationship and with a tight seam as the strand exits from the forming tube. The pressure at which the waterproofing jelly-like compound is introduced into the forming tube also is such that the waterproofing compound flows between the overlapped edge portions of the sheath to seal and waterproof the seam formed by the edge portions.

3,733,226

LAMINATE STRUCTURE SUITABLE FOR CARPET USE AND METHOD OF MAKING

Frederick L. Stoller, Greenville, S.C., assignor to Phillips Petroleum Company

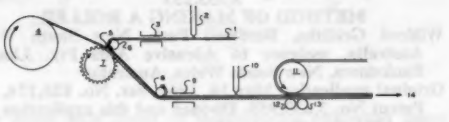
Filed Dec. 22, 1970, Ser. No. 100,702

Int. Cl. B32b *5/00;* D04h *11/00*

U.S. Cl. 156—72 3 Claims

A laminate structure, as in a carpet, in one form comprises a non-woven heat sealable fabric, heat sealed on one side, laminated with an adhesive to a facing layer of heat sealable fibers, applied as by an embossing roll which can be heated. The non-woven fabric can be a needle-punched assemblage of a scrim and fibers and the assemblage heat sealed on that side of the scrim from which the needles have emerged thus to lock the fibers into the scrim when heat sealing to provide a fibrous, non-heat sealed pad side of the assemblage. The adhesive can be

a thermally responsive, i.e., a thermoplastic or thermosetting, film, powder or melt. The adhesive in tacky, fiber receiving condition, as after being passed through a heating zone, is passed together with a face yarn web through an embossing zone, the embossing member of which can be heated. In a modification a further backing can be



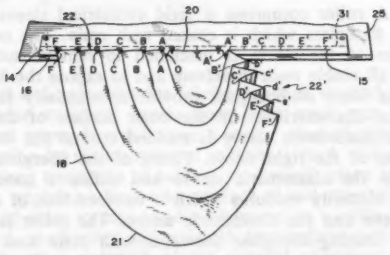
applied to the non-heat sealed pad side. When the nonwoven fabric can be readily heat sealed it can be passed directly together with the face yarn to a heated embossing roll or press and the two heat sealed there together without use of adhesive. Likewise, the second backing can be so applied.

3,733,227

METHOD OF MAKING A DRAPERY SWAG

Albert E. Collins, Jr., 3030 Mount Diablo St., Concord, Calif. 94520

Filed Feb. 19, 1971, Ser. No. 116,818
Int. Cl. A47k *23/00*
U.S. Cl. 156—196 **12 Claims**



A method of making a drapery swag or the like from a backing strip having an alignment pattern therealong and a swag blank cut from a drapery fabric. The backing strip is buckram having a heat-sensitive adhesive along one surface thereof upon which the alignment pattern is printed, and the alignment pattern has an essentially straight line running from end-to-end thereof and a plurality of longitudinally spaced alignment positions located along the line. The swag blank has a straight upper edge, an arcuate lower edge, and side edges with a generally saw-toothed configuration therealong providing spaced apart roots or alignment points. The backing strip is secured along a flat surface, and the upper edge of the swag blank is temporarily attached to the backing strip in a centered and aligned disposition with the longitudinal line of the pattern thereon, and the side edges of the blank are then folded and placed along the backing strip with the roots of the saw-toothed edges in respective juxtaposition with the alignment positions on the backing strip and with the side edge portions of the blank aligned with the longitudinally extending line of the alignment pattern. Thereafter, the backing strip is folded over the side edges of the swag blank and is heated to permanently secure the same to the swag blank.

3,733,228

METHOD OF MANUFACTURE OF GLASS FIBER REINFORCED EPOXY RESIN TUBES

Ludwig Wesch, Heidelberg, Germany, assignor to Manufacture de Machines du Haut-Rhin S.A., Mulhouse-Bourtzwiller, France

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,195
Claims priority, application France, Mar. 7, 1969, 6906540
Int. Cl. B65h *81/06*
U.S. Cl. 156—172 **8 Claims**

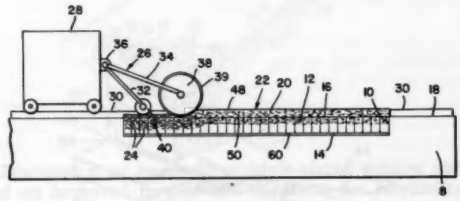
Glass fiber reinforced epoxy resin tubes can be mass produced by winding glass fibers or filaments upon a mandrel at a high linear speed, preparing an epoxy resin which has a controlled viscosity of 400 to 900 cp. with an epoxy equivalent of 120 to 180 by mixing a more viscous epoxy resin with additives including reactive diluents which have a viscosity of 3.5 to 200 cp., an ebullition temperature of 120–30° C., and an epoxy equivalent of 70 to 180, and applying such prepared mixture to the filaments being wound. The additives may include hardeners, accelerators, and silanes. A layer of soft, uncured epoxy resin may be applied to the winding as the winding operation continues, or a layer of roving may be applied to the winding during the winding operation.

3,733,229

METHOD OF FILLING HONEYCOMB CORES WITH FIBERS

Donald E. Scheer, San Ramon, and Robert G. Noble, Castro Valley, Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed Sept. 16, 1970, Ser. No. 72,781
Int. Cl. B31d *3/02*
U.S. Cl. 156—197 **16 Claims**



A method of filling honeycomb cores with thin fibers by placing the expanded core in a holding fixture, placing a mat of relatively brittle fibers on top of the core and reciprocating at least one roller across the mat until the fibers are severed along core cell walls and have been moved into the cells. Adhesive or resinous materials are applied to the core and/or the fibers to retain the fibers in the cells during handling of the filled core.

3,733,230

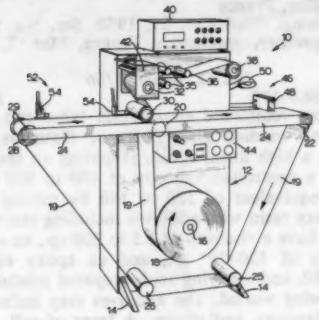
LABEL INSPECTION SLITTER/REWINDER

Allan R. Prittie, 12 Blackdown Cr., Islington, Ontario, Canada

Filed Feb. 8, 1972, Ser. No. 224,427
Int. Cl. B65h *17/34*
U.S. Cl. 156—64 **8 Claims**

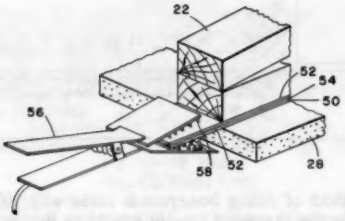
This invention provides a web processing device which has an unwinding mandrel and a rewinding mandrel, and is adapted to receive rolls of web on the former and rewind the web on the latter. Between the mandrels, the unwinding web is made to follow a path which brings it sequentially to a web inspection location and a splicing location. Braking means are provided for halting the movement of the web along the path. The distance along the path between the web inspection location and the splicing location is long enough to permit the braking means to halt the movement of the web before a given

point on the web can move the full distance from the web inspection location to the splicing location. In this way, there is no need to provide reverse drive facility



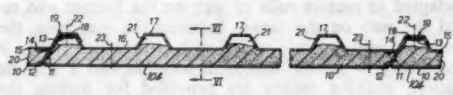
on the unwinding mandrel for the purpose of moving the web backwards should a faulty section detected at the inspection location over-shoot the splicing location.

3,733,231
WALLBOARD ATTACHMENT
Edward J. Rutkowski, Kenmore, and Joseph W. Schneller, Williamsville, N.Y., assignors to National Gypsum Company, Buffalo, N.Y.
Filed June 16, 1971, Ser. No. 153,611
Int. Cl. E04b *2/00*
U.S. Cl. 156—71 **3 Claims**



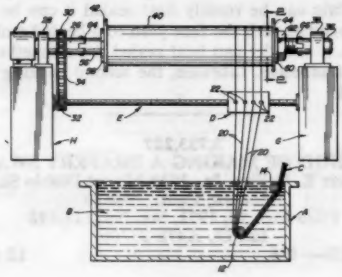
Wallboard affixed to studs or trusses by a strip of metal foil with hot melt adhesive on both surfaces, disposed between the board and the framing member and held there firmly while heating the foil with an electric current.

3,733,232
METHOD FOR MAKING BUILDING SHEATHING ELEMENTS
Harold J. W. Payne, Raby Mere, England, assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Oct. 10, 1967, Ser. No. 674,317
Claims priority, application Great Britain, Feb. 2, 1967, 5,074/67
Int. Cl. B32b *5/18*; E04b *2/28*; E04c *1/00*
U.S. Cl. 156—79 **1 Claim**



A prefabricated, insulated building panel formed from an inner liner sheet and a fluted outer facing sheet with side edges of both sheets engaged to allow overlapping connection of the assembled panels in side-by-side relation on a building outer surface. The panels contain foamed-in-situ insulation which serves as thermal and sound insulation and serves to rigidify the panel. The foamed-in-situ insulation may fill less than all of the volume of the fluted outer facing sheet.

3,733,233
METHOD OF MAKING A ROLLER
Wilfred Griffiths, Bardwell Park, New South Wales, Australia, assignor to Abrasive Aids Pty. Limited, Bankstown, New South Wales, Australia
Original application May 16, 1969, Ser. No. 825,174, now Patent No. 3,639,958. Divided and this application Jan. 29, 1971, Ser. No. 111,099
Int. Cl. B32b *31/22*; B65h *81/06*
U.S. Cl. 156—153 **9 Claims**

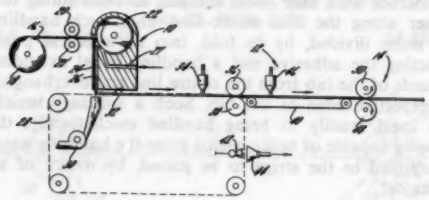


A roller comprises a rigid cylindrical sleeve formed of fiberglass which is coated with resin. The outer surface of the sleeve is machined to remove substantially all visible resin therefrom and to expose the fiberglass. The fibers of fiberglass provide substantially fuzzy surface characteristics on the outer surface of the sleeve. An elastomeric sleeve is molded around the outer surface of the rigid sleeve. Fibers of the fiberglass extend into the elastomeric sleeve and define a zone having an elasticity modulus which is between that of the rigid sleeve and the elastomeric sleeve. The roller is formed by coating fiberglass filaments with resin and winding them upon a rotating mandrel. When a desired thickness of resin coated filaments are on the mandrel, the filaments are cut and the assembly is heated to partially cure the resin while the mandrel is rotated. Following the final curing of the rigid sleeve, it is placed in a lathe where its outer surface is machined to remove free visible resin on its exterior surface and to expose the fiberglass fibers. The exterior of the rigid sleeve is then coated with a bonding agent and an elastomeric sleeve is bonded to its exterior surface.

3,733,234
METHOD FOR FORMING AN AIRLAID WEB
Charles E. Dunning, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation-in-part of abandoned application Ser. No. 882,257, Dec. 4, 1969, which is a continuation-in-part of application Ser. No. 783,877, Dec. 16, 1968. This application May 20, 1971, Ser. No. 145,451
Int. Cl. B31f *1/36*
U.S. Cl. 156—209 **9 Claims**

A method for forming lightweight cellulosic webs useful for tissue and toweling applications comprises air laying a continuum of wood fibers on a foraminous carrier, moisturizing the wood fiber continuum and bonding the continuum with a pair of rolls, at least one having a series of land areas thereon, the rolls forming a nip through

which the continuum is passed and adapted to compress the continuum into a pattern of thin, localized bonded

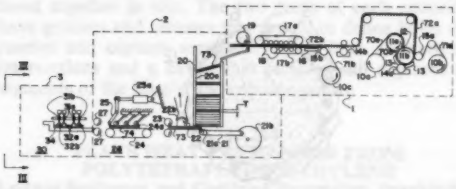


fiber zones with zones of substantially unbonded fibers therebetween.

3,733,235
FABRICATION OF LAMINATED STRUCTURAL PANELS

John De Light and Clifford D. Shelor, Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed July 22, 1971, Ser. No. 165,017
Int. Cl. B32b *31/00*
U.S. Cl. 156—260 **19 Claims**



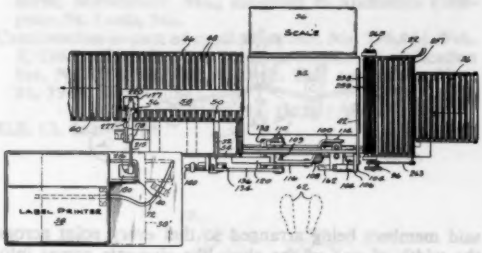
Method and apparatus for fabricating high strength to weight ratio structural panels from sheet stock such as corrugated paper board having a major strength plane and direction by slicing strips of said sheet stock along a cutting plane transverse of said major strength plane and direction, applying adhesive to one face of said strips conveying said strips in edge-to-edge alignment to a collimating device, re-aligning said strips in face-to-face contact with each other and with planar parallel alignment of strip edges and applying adhesive setting pressure between adjacent faces.

3,733,236
REVERSIBLE MANUAL AND AUTOMATIC LABELING MACHINE

John T. Young, Lake Bluff, Ill., and Charles E. Michels, Racine, and Thomas C. Zimmerman and Gilbert M. Hagemann, Franksville, Wis., assignors to Reliance Electric Company, Toledo, Ohio

Continuation of abandoned application Ser. No. 732,750, May 28, 1968. This application July 22, 1970, Ser. No. 64,041
Int. Cl. B65g *47/26, 69/00*; G01g *13/00*
U.S. Cl. 156—360 **4 Claims**

Between input and output conveyors is an opening in which a computer scale may be reversed to face toward either side of the machine, parts required for propelling the workpiece across the scale table being interchangeable from one side to the other. Regardless of scale position, mechanism associated with the output conveyor rectifies successive workpieces on the conveyor rather than the scale platform to align them with the labeler for automatic operation irrespective of the side toward which the scale faces. The label printer remains at one side of the output conveyor and is operable either manually or automatically. The printer is mounted for bodily movement to facilitate manual operation whether the

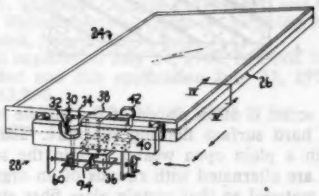


operator stands at one side or the other side of the machine.

3,733,237
APPARATUS FOR MAKING HERMETICALLY SEALED GLAZING UNITS

Bernhard B. Wolff, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Original application Aug. 19, 1970, Ser. No. 65,126, now abandoned. Divided and this application Oct. 20, 1971, Ser. No. 190,858
Int. Cl. B31f *1/00*; C03c *27/00*; E06b *3/24*
U.S. Cl. 156—468 **7 Claims**



Disclosed is an improved multiple glazed window unit and an improved method and apparatus for fabricating hermetically sealed glazing units comprised of a pair of spaced glass sheets separated at their marginal edges by a flexible spacer and surrounded about the perimeter by a deformable sealant covered with a flexible or non-rigid tape. In accordance with use of the preferred process and apparatus of this invention, the portions of the flexible cover tape and sealant overlying the spacer are longitudinally recessed or indented relative to lateral portions of the tape and sealant overlying the glass sheet edges.

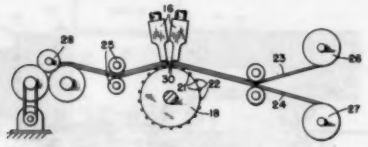
3,733,238
APPARATUS FOR VIBRATION WELDING OF SHEET MATERIALS

Delmar D. Long, Southbridge, and Edgar C. Rust, Jr., Williamstown, Mass., and Stanley L. Lawrence, Stamford, Vt., assignors to Crompton & Knowles Corporation, Worcester, Mass.

Filed Dec. 13, 1971, Ser. No. 207,322
Int. Cl. B06b *3/00*; B23k *1/06*
U.S. Cl. 156—580 **7 Claims**

Ultrasonic apparatus for welding thermoplastic sheet-like elements wherein a plurality of spaced ultrasonic vibration transmitting members having working surfaces in contact with one side of the sheet-like elements. The working surfaces cooperate with opposing spaced anvil surfaces located on the opposite side of the sheet-like elements for producing welds in the material there-

between. Means are provided to advance the sheet-like elements between the members and the anvil surfaces,



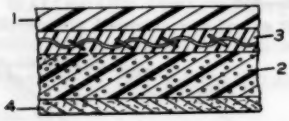
said members being arranged so that every point across the width of one of the sheet-like elements comes into contact with at least one of said working surfaces.

3,733,239

GLASS-ORGANIC FIBER SCRIM FOR FLOORING

Jay R. George, Manheim, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Nov. 19, 1971, Ser. No. 200,561
Int. Cl. D03d *13/00, 15/00;* B32b *3/26*
U.S. Cl. 161—89 1 Claim



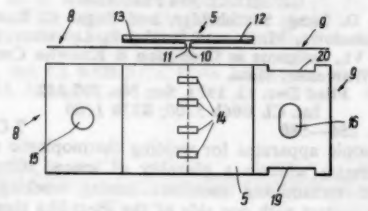
A glass scrim is often placed as the middle layer of a laminated hard surface flooring structure. The scrim is normally in a plain open weave. Herein the strands of glass fiber are alternated with strands of an organic thermoplastic material so that certain glass fiber strands are not placed in an overlying relationship in a certain direction of the weave.

3,733,240

ADHESIVE SPLICING ELEMENT AND METHOD OF SPLICING

Rudolf Hanke, Monheim, Schwaben, Germany, assignor to Hama Hamaphot, K.G., Hanke & Thomas, Monheim, Schwaben, Germany

Filed Apr. 12, 1971, Ser. No. 133,263
Claims priority, application Germany, May 19, 1970, P 20 24 303.2
Int. Cl. B32b *3/10;* G03d *15/04*
U.S. Cl. 161—102 3 Claims



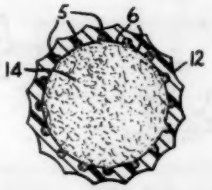
An adhesive splicing element for use in splicing together the ends of two strips (such as tape-recorder tapes) comprises a substantially rectangular pliable tab adhesive coated on one side and having perforations in a row along its centre line; folded strippable handling strips overlie the adhesive layer each to cover a respective half thereof with their folds abutting or confronting one another along the said centre line, each such handling strip being divided, by its fold, into an adherent panel contacting the adhesive and a handling panel extending outwards of the tab from the centre line and overhanging the respective edge of the tab. Such a splicing element lends itself readily to being handled mechanically, the tab being capable of being peeled from the handling strips and applied to the strips to be joined, by means of an applicator.

3,733,241

EXTRUDING TOW FILLED MOUTHPIECE ROD HAVING SERRATED INNNER SURFACES CLENCHING THE TOW

George L. Mathe, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Original application Jan. 3, 1969, Ser. No. 788,903, now Patent No. 3,607,512. Divided and this application Mar. 24, 1971, Ser. No. 127,799
Int. Cl. B32b *5/00*
U.S. Cl. 161—116 2 Claims



A method with which a continuous length, tubular article filled with a tow of a fibrous material and having serrated or grooved inner surfaces clenching the tow is disclosed. The article is formed by extruding thermoplastic material as a tubular sheath having a smooth inner surface at extrusion around an advancing tow of fibers, the serrations or grooves being formed by spraying a cooling fluid against the inner wall surface of the plastic sheath at circularly spaced locations therein as it leaves the extrusion aperture. The cooling fluid functions to chill and set the inner wall surface sufficiently so that when the tubular sheath is thereafter pulled down from an initial to a final size, the sheath will pull down to a lesser extent at said spaced locations than at the still more plastic surfaces intervening said spaced locations thereby forming longitudinal grooves in the sheath inner wall surface.

3,733,242

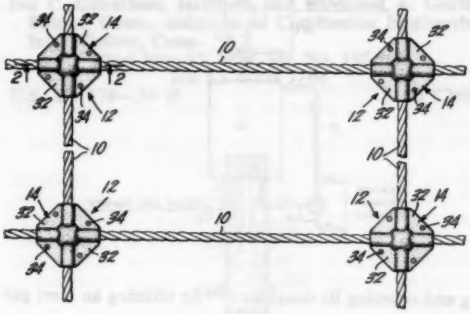
DECORATIVE LAMINATE COATED ON ITS BACKMOST SURFACE WITH A CARBOXYLATED STYRENE-BUTADIENE POLYMERIC RUBBER BASED ADHESIVE AND PROCESS FOR INSTALLING THE SAME

Walter Thomas Davis, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,495
Int. Cl. B32b *3/26;* E04b *2/00*
U.S. Cl. 161—160 10 Claims

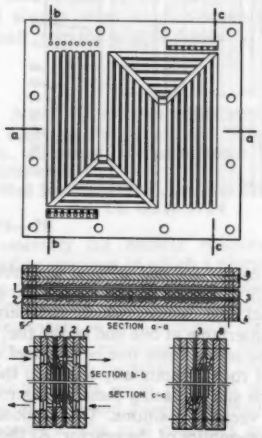
A process which bonds a decorative laminate to a substrate comprising coating the backmost flat surface of the laminate with certain quantities of a carboxylated styrene-butadiene polymeric rubber, drying the adhesive, reactivating the adhesive and installing the laminate by pressing against the substrate to which the laminate is to be attached.

3,733,243
NET
James H. Crawford, Anniston, Ala., assignor to Indian Head, Inc., New York, N.Y.
Filed Nov. 24, 1971, Ser. No. 201,713
Int. Cl. B32b 3/06
U.S. Cl. 161—48 14 Claims



A net comprising mutually crossing lines interconnected at the intersections to form meshes by two-piece thermoplastic connectors, the parts of which are ultrasonically fused together in situ. The two parts of each connector have grooves and recesses that match to define holes that receive and capture segments of the lines adjacent the intersections and a cavity that receives and captures the segments of the lines at the crossing points.

3,733,244
PLATE HEAT EXCHANGER FROM POLYTETRAFLUOROETHYLENE
Ludwig Sanberger and Gottfried Burgstaller, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Feb. 16, 1971, Ser. No. 115,493
Claims priority, application Germany, Feb. 17, 1970, P 20 07 033.1
Int. Cl. F28f 3/00
U.S. Cl. 161—166 6 Claims

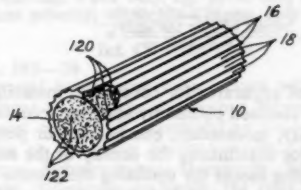


A plate heat exchanger which consists of plates and separating sheets made from polytetrafluoroethylene, the plates being provided with channels on one or both sides. The channels of adjacent plates are separated by sheets made from polytetrafluoroethylene.

3,733,245
COMPOSITE TEXTILE FIBERS HAVING NON-WATER REVERSIBLE CRIMP
Thomas M. Veazey, Decatur, Ala., and Wayne R. Eberhardt, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 796,064, Feb. 3, 1969, which is a continuation-in-part of application Ser. No. 314,781, Oct. 8, 1963. This application Nov. 21, 1969, Ser. No. 882,750
Int. Cl. D01d 5/28; D02g 1/00
U.S. Cl. 161—173 6 Claims

A composite acrylonitrile filament having non-water reversible crimp, stability of the crimp being achieved by controlling the ionizable groups in each component of the filament. The filament is also useful as a stuffing material.

3,733,246
FORMING FILLED CONTINUOUS PLASTIC ROD SUCH AS PLASTIC CIGARETTE FILTER ROD FILLED WITH A TOW OF CELLULOSE ACETATE
Richard N. Thomson, Jerome S. Osmalov, and George L. Mathe, Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Original application July 24, 1968, Ser. No. 747,279. Divided and this application July 23, 1970, Ser. No. 63,996
Int. Cl. A24c 5/50; B01d 27/00
U.S. Cl. 161—176 1 Claim



A method with which a continuous length, tubular article filled with a gas or liquid pervious filler material such as a tow filled plastic cigarette filter rod is formed by extruding plastic as a sheath around an advancing bloomed tow of fibrous filter material, heat from the plastic extrudate being utilized in the course of the forming operations to accelerate curing of a plasticizer impregnating the tow. A crosshead type extrusion die is utilized for the forming operation and is provided with a central tube extending longitudinally therein for receiving the advancing tow and isolating it from the molten plastic with which the extrudate is formed, the latter entering the die laterally and issuing from the mouth thereof as a continuous tubular sheath which makes first contact with the tow at a distance downstream of the die mouth. The extrudate on leaving the crosshead die is then sized by passing it through a cooling chamber wherein the external dimension of the plastic sheath is accurately controlled within predetermined limits.

3,733,247

BLEACHING OF CELLULOSE FIBERS WITH AN AQUEOUS SOLUTION OF A WATER-SOLUBLE HYDROPEROXYPENTACYANOCOBALTATE SALT

John Allan Fetchin, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,163
Int. Cl. D21c 9/16
U.S. Cl. 162—78 10 Claims

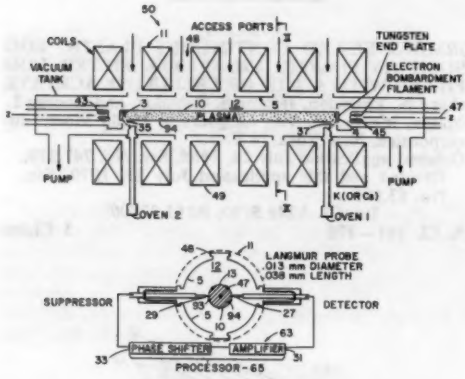
Cellulose fibers are bleached by contact with an aqueous solution of a water-soluble hydroperoxypentacyanocobaltate salt. The spent cobaltate salt is regenerated and recycled.

3,733,248

PLASMA CONTROL BY FEEDBACK

Hans W. Hendel, Princeton, N.J., Francis F. Chen, Los Angeles, Calif., and Tsu-Kai Chu, Harold P. Furth, Francis W. Perkins, Thomas C. Simonen, and John B. Taylor, Princeton, N.J., assignors to the United States of America as represented by the United States Atomic Energy Commission

Continuation of abandoned application Ser. No. 12,309, Feb. 18, 1970. This application Feb. 15, 1972, Ser. No. 226,556
Int. Cl. G21b 1/00
U.S. Cl. 176—3 9 Claims



Method and apparatus for controlling instabilities in a magnetically confined plasma by applying feedback to the particle density, momentum, energy, and/or potential of the plasma, for maximizing the density of the same and/or for providing means for confining the plasma for long periods of time and/or at high temperatures. More particularly, this invention contemplates feedback control of the plasma by selectively injecting particles, momentum or energy into the plasma. In another aspect, this invention contemplates feedback control of the magnetic confining field.

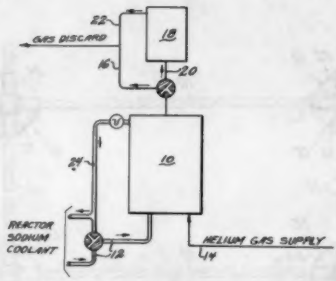
3,733,249

METHOD FOR DETECTING AND MONITORING A FUEL ELEMENT FAILURE IN A NUCLEAR REACTOR

William E. Miller, Naperville, and William J. Mecham, Hickory Hills, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 2, 1971, Ser. No. 194,963
Int. Cl. G21c 17/04
U.S. Cl. 176—19 LD 6 Claims

A method for detecting a fuel element failure in a liquid-sodium-cooled fast breeder reactor and for monitoring the progression thereof, wherein the failure causes sodium coolant to contact the fuel oxide, which comprises determining the level of ^{135}I activity in the liquid sodium resulting from the failed fuel element by separating and counting its daughter ^{135m}Xe utilizing an inert gas sparge.

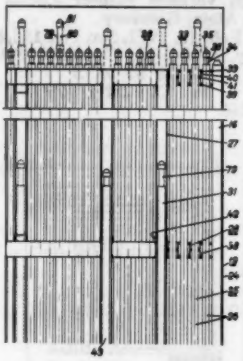


3,733,250

METHOD AND MEANS FOR FUEL EXCHANGE IN A NUCLEAR REACTOR

Aart van Santen, Vasteras, and Kjell Elofsson, Handen, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

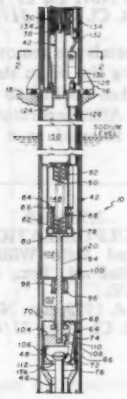
Filed Dec. 1, 1969, Ser. No. 881,111
Claims priority, application Sweden, Dec. 2, 1968, 16,408/68
Int. Cl. G21c 19/20
U.S. Cl. 176—30 9 Claims



A nuclear reactor formed of fuel assemblies each including a pluality of parallel fuel rods arranged in a predetermined fuel rod lattice, which rods are freely extractable and insertable at one end of the fuel assembly, is refueled by extracting from one of the fuel assemblies a number of fuel rods substantially less than the total number of fuel rods and replacing these by inserting new fuel rods into the vacated positions. This is done for a majority of fuel assemblies of the reactor. At the next refueling operation different fuel rods from those previously replaced are removed and replaced. The removal and return of the rods is produced by a tool having a plurality of gripping members capable of engaging shoulders beneath heads formed on the upper ends of the fuel rods. This may be accomplished by providing a tool having a

number of gripping members attached to the tool body corresponding to the lattice positions of the fuel rods to be extracted, having gripping members which can be pushed together to grip beneath shoulders on the upper ends of the fuel rods.

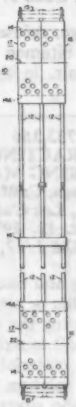
3,733,251
CONTROL ROD RELEASE MECHANISM
Jon C. Gilbertson, Hartford, and Raymond A. Gorsky, Bolton, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed June 22, 1971, Ser. No. 155,461
Int. Cl. G21c 7/08
U.S. Cl. 176—36 R 25 Claims



A control rod release mechanism utilizing a pneumatically actuated mechanical gripper device located immediately above the reactor core region and remotely connected to the control rod drive mechanism. The pneumatic system includes a pressure source which exerts a force on a gripper actuating member in a direction to initiate positive gripping action of a control rod extension shaft by the gripper device. The actuating member is spring biased towards a positive grip release initiating position so that release of the pressure of the pneumatic system will always serve to disconnect the control rod extension shaft from the gripper device.

3,733,252
NUCLEAR FUEL ASSEMBLY
Nicholas J. Georges, Pittsburgh, and William E. Pennell, Irwin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 26, 1968, Ser. No. 779,054
Int. Cl. G21c 3/34
U.S. Cl. 176—78 8 Claims

A fuel assembly for nuclear reactors wherein grid members having openings in which a plurality of fuel rods are laterally supported are structurally integrated by temperature compensated longitudinal members of an elongated framing means so as to minimize thermal bowing of the fuel rods. In one embodiment, the longitudinal members of the elongated framing means comprises a number of insulated tubes, each provided with an internal coolant flow channel and joined proximate their ends by the grid members. The grid members on each end are in turn joined by a shear resisting web structure to form a shear-grid such that a transverse temperature gradient produces end moments on the fuel assembly which balance each other. In another embodiment, the insulated tubes are replaced by struts constructed of several materials of selected lengths and thermal expansion properties so joined that the expansion of the various materials produces no overall elongation of the strut between selected points. In still another embodiment, the shear-grid structures are formed as and connected by a temperature compensated enclosure to form a "canned" fuel assembly



having essentially zero expansion between a plurality of lateral planes at which the grids may be located. Optionally, groups of fuel rods may be joined by shear webs so as to produce an integral structure which may be inserted in the grid openings and thereby produce increased stability due to an increased moment of inertia.

3,733,253
METHOD OF PRODUCING CITRIC ACID
Takashi Suzuki and Yasuhiro Sumino, Hyogo, Shunichi Akiyama, Kyoto, and Hideo Fukuda, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed July 15, 1970, Ser. No. 55,229
Claims priority, application Japan, July 15, 1969, 44/56,272
Int. Cl. C12d 1/04
U.S. Cl. 195—30 7 Claims

Citric acid is produced by a process which comprises contacting (+)-isocitric acid with a fermentation broth of a yeast capable of accumulating (+)-isocitric acid belonging to the genus Saccharomyces, Candida, Brettanomyces, Debaryomyces, Hansenula, Kloeckere, Trichosporon, Torulopsis or Pichia, the cells of said yeast, or a processed matter derived from the broth or the yeast cells, at pH 7.0 to 9.5, thereby convertnig (+)-isocitric acid to citric acid and subsequently recovering the citric acid so accumulated.

3,733,254
METHOD OF PREPARING d-13β-ETHYLGONA-1,3,5(10)-TRIENE-2,16α,17β-TRIOL
George C. Buzby, Jr., Philadelphia, and George Greenspan, Narberth, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Feb. 22, 1971, Ser. No. 117,783
Int. Cl. C07c 167/00
U.S. Cl. 195—51 C 1 Claim

The preparation of d-13β-ethylgona-1,3,5(10)-triene-3,16α,17β-triol by contacting d-13β-ethylgona-1,3,5(10)-triene-3,17β-diol with *Bacillus megaterium* under aerobic fermentation conditions is reported. This compound is useful as an impeded estrogen in treating infertility due to anovulation.

3,733,255

CONVERSION OF MUNICIPAL REFUSE, SEWAGE SLUDGE AND OTHER WASTES TO HEAVY OIL OR BITUMEN

Herbert R. Appell, Monroeville, Pa., and John S. Tosh, Alexandria, Va., assignors to the United States of America as represented by the Secretary of Interior

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,704
Int. Cl. C10b 57/00
U.S. Cl. 201—25 7 Claims

Municipal sewage sludge, refuse and other wastes are converted to heavy oil or bitumen by heating under pressure, in the absence of air, in the presence of carbon monoxide and water.

3,733,256

PROCESS FOR EXTRACTING SILVER FROM SILVER BEARING MATERIALS

Ralph Anderson, Saratoga, Calif., assignor to Future Systems, Inc., Los Gatos, Calif.

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,213
Int. Cl. C22d 1/12, 11/06
U.S. Cl. 204—109 5 Claims

A process for extracting and recovering silver from the gelatin layer of photographic or other solid base materials including the steps of treating the material with an aqueous solution of oxidizing salt to oxidize the metallic silver in the gelatin layer of the material; washing the material with a complexing agent; solution to form silver thiosulfate ions and recovering the silver from the complexing agent solution.

3,733,257

RADIATION INITIATED PROCESS FOR THE GRAFT COPOLYMERIZATION OF BINARY MONOMER MIXTURES AND CELLULOSE

Jett C. Arthur, Jr., Metairie, and James A. Harris, Pearl River, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 19, 1971, Ser. No. 200,618
Int. Cl. B01j 1/10, 1/12; C08d 9/06
U.S. Cl. 204—159.12 9 Claims

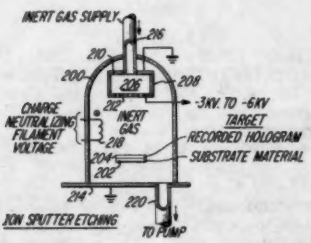
Industrial textiles and rigid construction cellulose-copolymer products are produced by processes of this disclosure. The fibrous cellulosic material is dried in the absence of oxygen to a moisture content of about 2%, irradiated with a radioactive source, then reacted with one of several binary monomer mixtures which are in certain preferred solvent mixtures and washed.

3,733,258

SPUTTER-ETCHING TECHNIQUE FOR RECORDING HOLOGRAMS OR OTHER FINE-DETAIL RELIEF PATTERNS IN HARD DURABLE MATERIALS

Joseph John Hanak, Trenton, N.J., and John Patrick Russell, Thalwil, Switzerland, assignors to RCA corporation, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,273
Int. Cl. C23c 15/00
U.S. Cl. 204—192 10 Claims



Sputter etching has been found to be capable of transferring holograms recorded on a photosensitive surface layer covering an underlying substrate material from the layer to the substrate material itself. The transferred hologram is in the form of a relief pattern. This technique provides both high fidelity and high resolution capabilities in both the depth dimension and in the surface dimensions of the transferred relief-pattern hologram, which are in the order of one micron or less, and is applicable to other fine-detail relief patterns.

3,733,259

TREATMENT OF HEAVY PETROLEUM OILS

Raymond F. Wilson, Edward L. Cole, and Reese A. Peck, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 10, 1971, Ser. No. 197,364
Int. Cl. C10g 31/08
U.S. Cl. 208—86 10 Claims

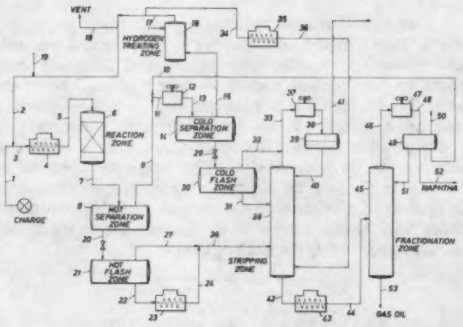
Asphaltenes and metals are removed from heavy petroleum oils by dispersing the oil in steam at a temperature of at least 750° F. then cooling to form a stable water-asphaltene emulsion. After separation from the emulsion, the treated oil may be used as a fuel or subjected to hydroconversion.

3,733,260

HYDRODESULFURIZATION PROCESS

James A. Davies and Dale Williams, Houston, and Thomas L. Hill, Stafford, Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,549
Int. Cl. C10g 23/00
U.S. Cl. 208—212 3 Claims



A hydrodesulfurization process for treating a sulfur containing gas-oil hydrocarbon charge to yield a low-sulfur gas-oil product and a naphtha product wherein effluent from a hydrodesulfurization process comprising gas-oil, naphtha, hydrogen and hydrogen sulfide is separated into a liquid fraction and a vapor fraction, wherein the vapor fraction is treated to yield a treated hydrogen stream substantially free of hydrogen sulfide, wherein recycle, naphtha is combined with the liquid fraction to form a mixture having a bubble point temperature below about 650° F. at a pressure of about 130 p.s.i.g., wherein the liquid mixture is stripped in a stripping zone to remove hydrogen sulfide employing treated hydrogen as stripping vapor at a pressure of about 100–130 p.s.i.g. at the bubble point temperature of the liquid mixture, wherein stripped liquid substantially free of hydrogen sulfide is fractionated into a naphtha fraction and a gas-oil fraction, and wherein a portion of the naphtha fraction is recycled for mixture with additional liquid fraction from the hydrodesulfurization reaction.

3,733,261

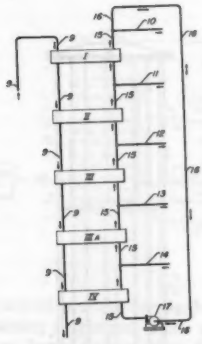
PROCESS FOR SEPARATING OLEFINS FROM SATURATED HYDROCARBONS

Frank H. Adams, La Grange Park, and Joe M. Pharis, Lockport, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 100,105, Dec. 21, 1970. This application Apr. 10, 1972, Ser. No. 242,456

Int. Cl. C07c 7/12

U.S. Cl. 208—310 7 Claims



An improved process for separating olefinic hydrocarbons in high purity from a feed stream containing a mixture of olefinic and paraffinic type hydrocarbons along with contaminants including aromatic and non-normal type hydrocarbons. The general process operations include a contacting operation wherein an olefinic hydrocarbon is preferentially adsorbed by a selective adsorbent in an adsorption zone and subsequently contacted with a desorbent material in a desorption zone to effect the removal of preferentially adsorbed olefins from the adsorbent. The improvement resides in effecting the removal of product olefins from the adsorbent prior to contacting the adsorbent in the desorption zone with an increased concentration of desorbent to effect a second desorption of the more tenaciously held contaminant hydrocarbons. The improvement allows the process to rid the adsorbent of contaminants (aromatic and non-normal hydrocarbons) present on the adsorbent when attempting to separate olefinic hydrocarbons. This results in increased adsorbent capacity for olefinic hydrocarbons and improved olefinic extract purity relative to contaminants.

3,733,262

AROMATICS EXTRACTION PROCESS

Michael R. Basila, Munster, Ind., and Alfred R. Pate, Jr., Tyler, Tex., assignors to Howe-Baker Engineers, Inc., Tyler, Tex.

No Drawing. Continuation-in-part of application Ser. No. 752,740, Aug. 15, 1968, now Patent No. 3,583,906. This application Feb. 16, 1971, Ser. No. 115,864

The portion of the term of the patent subsequent to June 8, 1988, has been disclaimed

Int. Cl. C10g 21/16

U.S. Cl. 208—331 10 Claims

Aromatics are extracted from aromatics-containing hydrocarbon mixtures by contacting said mixtures with a solvent comprising 2-(2-aminoethoxy) ethanol containing water in amounts from about 0.7–10 percent, by volume.

3,733,263

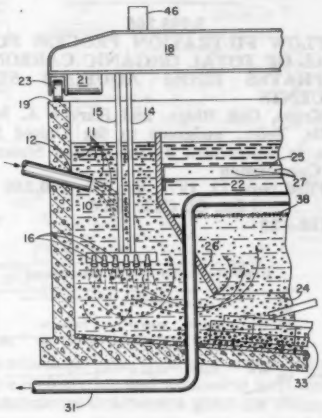
WASTE TREATMENT SYSTEM

Mikkel G. Mandt, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 1, 1971, Ser. No. 119,463

Int. Cl. C02c 1/06

U.S. Cl. 210—7 10 Claims



Compact waste treatment unit utilizing annular flow, positive mixing aeration with inclusive sludge blanket clarification and internal sludge recycle.

3,733,264

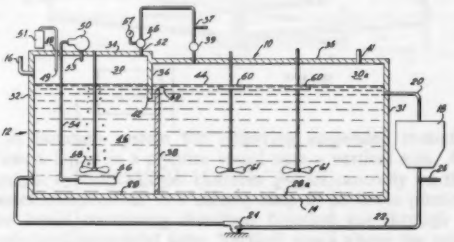
ACTIVATED SLUDGE SEWAGE TREATMENT PROCESS AND SYSTEM

Marshall L. Spector, Belle Mead, N.J., and Robert D. Jones, Allentown, and Curtis S. McDowell, Macungie, Pa., assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Mar. 18, 1971, Ser. No. 125,603

Int. Cl. C02c 1/10

U.S. Cl. 210—7 4 Claims



An activated sludge sewage treatment process and system which includes an initial enclosed aeration chamber providing a vessel for a mixed liquor formed from a liquid biologically degradable waste and recirculated sludge where the liquor is aerated in an oxygen enriched environment and a subsequent aeration chamber where

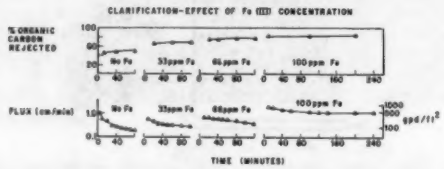
the liquor, after being treated in the initial chamber, is aerated in the subsequent chamber in the presence of atmospheric air or a gas which has a slightly higher percentage of oxygen enrichment than atmospheric air. The system is designed so that between 15 to 95% of the oxygen utilized by the mixed liquor, to effect biological degradation, is utilized by the liquor in the initial chamber and the remainder of the oxygen utilized by the liquor for biological degradation is utilized in the liquor when the liquor is in the subsequent aeration chamber.

3,733,265

CROSS-FLOW FILTRATION PROCESS FOR REMOVAL OF TOTAL ORGANIC CARBON AND PHOSPHATES FROM AQUEOUS SEWAGE EFFLUENTS

Kurt A. Kraus, Oak Ridge, and Harvey A. Mahlman, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 22, 1971, Ser. No. 200,840
Int. Cl. C02c *5/06*
U.S. Cl. 210—23 **7 Claims**



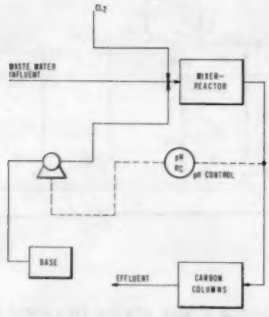
An improved method is provided for removing the organic and phosphate content of an aqueous feed which comprises adding an effective amount of a salt which hydrolyzes to a hydrous oxide to said feed and then passing the thus-treated feed tangentially past one face of a porous substrate at a pressure sufficient to produce a clarified filtrate on an opposite face of said substrate.

3,733,266

WASTE WATER PURIFICATION BY BREAKPOINT CHLORINATION AND CARBON ADSORPTION

Dolloff F. Bishop, Camp Springs, Md., and Alan F. Cassel and Thomas A. Pressley, Springfield, Va., assignors to the United States of America as represented by the Administrator of the Environmental Protection Agency

Filed Sept. 7, 1971, Ser. No. 178,310
Int. Cl. C02b *1/36*; C02c *5/02*
U.S. Cl. 210—26 **7 Claims**



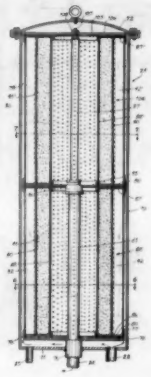
Sodium hypochlorite or chlorine is used to oxidize the ammonia in raw, secondary and lime clarified municipal wastewaters using breakpoint chlorination. Carbon adsorption columns are located downstream from the breakpoint chlorinator. In wastewater, the breakpoint requires a minimum chlorine dose of approximately an 8:1 weight ratio of $Cl:NH_3$—N in lime clarified secondary effluent. A slight chlorine excess is used which is adsorbed by the carbon thereby inhibiting slime buildup.

3,733,267

PROCESS OF FILTRATION OF DRY CLEANING FLUID

Gordon W. Haase, Madison, Wis., assignor to Frederick Taussig, St. Louis, Mo.

Filed Apr. 17, 1970, Ser. No. 29,558
Int. Cl. B01d *15/00*
U.S. Cl. 210—27 **4 Claims**



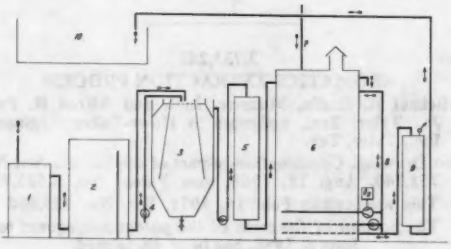
A method and apparatus, particularly adapted to filtering liquid, consisting of, preferably, a deep-walled fiber-bag or similar pre-filter, following by a cross flow filter cartridge comprising a primary filter, surrounding a coarse clay or clay-carbon adsorber unit containing heat-treated attapulgite particles of about 6–25 mesh size. A post-filter can filter out microparticles of clay or carbon.

3,733,268

PROCESS OF TREATING AND PURIFYING SEWAGE, PARTICULARLY OF SEWAGE CONTAMINATED WITH DETERGENTS

Karl Marschall, 3/7 Zenogasse, A–112 Vienna, Austria

Filed Dec. 8, 1970, Ser. No. 96,246
Claims priority, application Austria, Dec. 11, 1969, 11,559/69
Int. Cl. C02b *1/38*
U.S. Cl. 210—27 **1 Claim**



A sewage purification process wherein sewage is contacted with ozone and other gases after an optional prepurifiaction in a recirculation system under substantially atmospheric pressure.

3,733,269

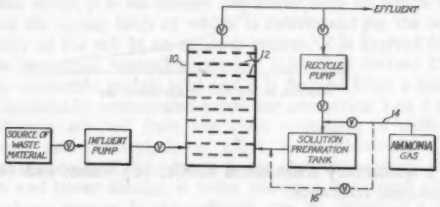
PROCESS FOR COAGULATING AND AGGLOMERATING PARTICULATE MATERIAL WITHIN A LIQUID MEDIA

Jan W. Gooch, Russellville, Ark., assignor to Paul Paladino and John H. Haley, Russellville, Ark., fractional part interest to each

Continuation-in-part of application Ser. No. 781,840, Dec. 6, 1968, now Patent No. 3,586,627, which is a continuation-in-part of application Ser. No. 757,224, Aug. 30, 1968, which in turn is a continuation-in-part of application Ser. No. 696,537, Jan. 9, 1968. This application Aug. 31, 1970, Ser. No. 68,399

Int. Cl. B01d *21/01*

U.S. Cl. 210—47 10 Claims



A waste extraction process for agglomerating, coagulating and extracting suspended solids and organic waste materials such as found in the waste effluent streams of packing and rendering plants, paper and pulp mills, food processing plants, wood preserving plants, rice processing plants, and similar facilities. In one embodiment of the invention, the process comprises introducing a reagent solution into the waste stream in such a manner that the reagent is released and dispersed within the waste stream in the form of a microscopically gaseous phase which is adsorbed on the surfaces of the suspended solids and organic waste materials to react with the surfaces of the solids and materials and produce surface characteristics which induce agglomeration and coagulation of the solids and materials.

3,733,270

METHODS OF SCALE INHIBITION

Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

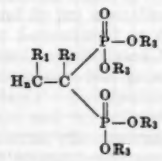
No Drawing. Continuation-in-part of application Ser. No. 27,984, Apr. 13, 1970. This application Mar. 8, 1971, Ser. No. 122,124

The portion of the term of the patent subsequent to Nov. 2, 1988, has been disclaimed

Int. Cl. C02b *5/06*

U.S. Cl. 210—58 3 Claims

The precipitation of scale-forming salts in an aqueous system is inhibited by adding either stoichiometric or substoichiometric amounts to said system of an organophosphorus compound which is a substituted ethane diphosphonic acid or its salt, said organo-phosphorus compound having the formula



wherein R_1 and R_2 are hereinafter defined and R_3 is hydrogen or a metal ion and n is an integer having a value of 1 or 2.

3,733,271

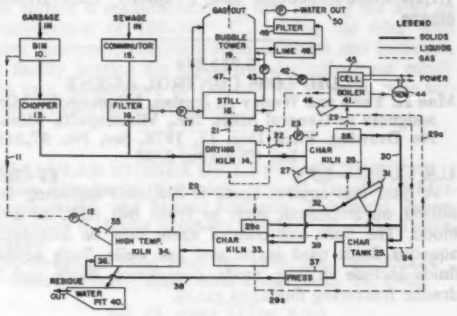
WASTE DISPOSAL APPARATUS AND METHOD

Horace W. Olsen, 2038 North Blvd., Houston, Tex. 17006

Filed Jan. 12, 1971, Ser. No. 105,812

Int. Cl. C02c *3/00*

U.S. Cl. 210—63 3 Claims



Solid waste in garbage, trash and sewage is subjected to progressive incineration and reduced to inert residue capable of reclamation. Combustion gases are utilized for generation of steam and electricity, and are freed of sulphur and other atmospheric pollutants. Liquid sewage effluent is made potable by chemical treatment.

3,733,272

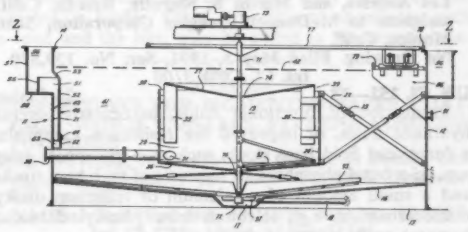
CIRCULAR FLOTATION SYSTEM

William F. Burns, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed July 16, 1971, Ser. No. 163,193

Int. Cl. B01d *19/00*; B03b *1/00*

U.S. Cl. 210—221 12 Claims



A flotation system for removing suspended material from a liquid in a circular vessel with a vertical axis. An upright cylindrical inlet chamber resides centrally on the vessel and receives in a mixing zone in its lower portion the liquid containing dissolved flotation gas through a horizontal tangential inlet. Vertical vones above the mixing zone direct the circulation liquid into a radial and linear flow rising upwardly in the inlet chamber. An inverted conical cover supported by the vanes provides an unbroken annular nozzle to direct liquid flow from the inlet chamber in a path forming an acute angle with the top of the vessel. Circumferential liquid outlets on the vessel remove the clarified liquid adjacent the sidewall at a certain selected horizon. Accumulated floating deposits and settled solids are removed through suitable outlets from the vessel.

3,733,273
AZEOTROPIC COMPOSITION OF FLUOROCARBONS

Bradley L. Munro, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,087
Int. Cl. C09k *3/06*
U.S. Cl. 252—1 5 Claims

An azeotropic composition is formed by 1,2-dichloro-1,1,2,2-tetrafluoroethane and 1 - chloro - 1,2,2 - trifluoroethane.

3,733,274
FLUID LOSS CONTROL AGENT

Mao H. Yueh and Wesley A. Jordan, Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,345
Int. Cl. C10m *3/08*
U.S. Cl. 252—8.5 C 12 Claims

A fluid loss control agent is disclosed including solubilized nucleoprotein such as from fish milt, or avian blood. The fluid loss control agent may be included in aqueous fluids used in oil and gas wells. Such aqueous fluids include drilling muds, completion fluids and hydraulic fracturing fluids.

3,733,275
N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Hagne, Robert E. Mod, and Gene Sumrell, New Orleans, La., and Winfred E. Parker, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,591
Int. Cl. C10m *1/20, 1/36, 1/38*
U.S. Cl. 252—46.3 7 Claims

This invention relates to N-acylmorpholines and N-mono and N,N-disubstituted fatty acid amides and to similar derivatives of epithioamides which are useful as base and extreme pressure lubricants and additives.

3,733,276
FUNCTIONAL FLUIDS HAVING INCREASED FIRE RESISTANCE

Robert S. McCord, Pacific Palisades, Donald H. Nail, Los Angeles, and Martin B. Sheratte, Reseda, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

No Drawing. Filed May 3, 1971, Ser. No. 139,870
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 26 Claims

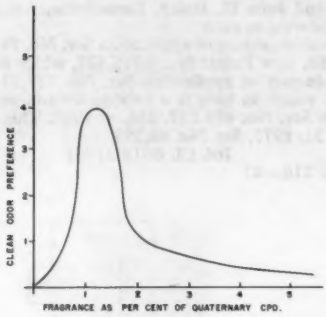
Production of functional fluids, particularly aircraft hydraulic fluids, of improved fire resistance, comprising a functional fluid base stock, such as a phosphate ester, e.g., tri-n-butyl phosphate, or mixtures of such base stocks, and a small amount of a selenium or tellurium dialkyl dithiocarbamate, e.g., selenium tetra (diethyl dithiocarbamate) or its tellurium analogue.

3,733,277
CLEANING AND SANITIZING CONCENTRATE CONTAINING LEMON-LIME FRAGRANCE

Robert P. Wooden, St. Louis Park, and William G. Page, Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of abandoned application Ser. No. 887,529, Dec. 23, 1969. This application Dec. 6, 1971, Ser. No. 205,157
Int. Cl. C11d *3/04, 3/48, 7/08*
U.S. Cl. 252—106 8 Claims

This invention is based upon the discovery that a subliminal quantity of a lemon-lime fragrance can be employed effectively without degradation in a liquid, low pH, sanitizing and cleaning solution containing quaternary ammonium halides to produce a fresh, clean fragrance sensation without producing an awareness of the specific lemon-lime odor. A cleaning and sanitizing concentrate is disclosed consisting essentially of (a) phosphoric or hydroxyacetic acid, (b) a nonionic synthetic detergent,



(c) a quaternary ammonium halide, (d) water, and (e) lemon-lime fragrance.

3,733,278
DETERGENT SLURRY PROCESS

Eric W. Vessey, Springfield, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

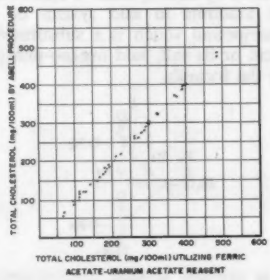
No Drawing. Filed Mar. 22, 1971, Ser. No. 127,057
Int. Cl. C11d *3/065, 11/00, 11/02*
U.S. Cl. 252—135 4 Claims

A method has been found for increasing the alkali metal silicate content of spray dried detergents without decreasing the spray dryer production and without changing the solubility characteristics of the detergent. The method involves the preparation of detergent slurries in a crutcher with high alkali metal silicate content by adding alkali metal silicate glass to the slurries in such a manner that it readily dissolves. The glass is added through a jet nozzle with steam pressure. Thus, the amount of water that must be removed by spray drying can be reduced or remain unchanged while the silicate solids of the slurry and subsequently the detergent can be increased substantially.

3,733,279
REAGENT FOR THE SOLUBILIZATION OF CHOLESTEROL

Amritlal C. Parekh and David H. Jung, Indianapolis, Ind., assignors to Research Corporation, New York, N.Y.

Original application Feb. 5, 1970, Ser. No. 8,954, now Patent No. 3,615,232. Divided and this application May 13, 1971, Ser. No. 143,190
Int. Cl. B01f *1/00, 3/12*
U.S. Cl. 252—363.5 3 Claims


TOTAL CHOLESTEROL (mg/100ml) BY ABELL PROCEDURE
TOTAL CHOLESTEROL (mg/100ml) UTILIZING FERRIC ACETATE-URANIUM ACETATE REAGENT

A reagent for the solubilization of cholesterol comprising a mixture of ferric acetate and uranium acetate, preferably dissolved in a lower aliphatic carboxylic acid.

3,733,280

POLYMERS DERIVED FROM CHLOROMALEIC ANHYDRIDE AS DETERGENT BUILDERS

Paritosh M. Chakrabarti, Hightstown, and Gert P. Volpp, Princeton, N.J., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,782
Int. Cl. C11d 3/066, 3/065
U.S. Cl. 252—539 6 Claims

Detergent compositions are described comprising a detergent surfactant and a water-soluble salt of a polymeric builder of the formula

$$[X_{(1-m-n)}Y_mZ_n]_p$$

wherein m and n are positive numbers whose sum is less than unity; p is an integer the lower limit of which is 3 and the upper limit of which is determined by the solubility of the salt in an aqueous system; X is derived from the monomer monochloromaleic acid; Y is derived from the monomer maleic acid and Z is derived from a monoethylenically unsaturated monomer containing 1 to 3 substituents selected from the class consisting of carboxy, lower carboxyalkyl, lower alkyl, lower chloroalkyl, hydroxy, non-gem. dihydroxy, lower aliphatic acyloxy, chloro and lower alkoxy, it being provided that some of the carboxy groups in the polymer can be esterified with a lower aliphatic radical.

3,733,281

METHOD OF CLEANING CARPETS AND FABRICS

La Mar E. Durfey, 165 North 3rd West, Provo, Utah, and Wells B. Johnson, North Las Vegas, Nev.; said Johnson assignor to said Durfey

No Drawing. Continuation-in-part of application Ser. No. 761,804, Sept. 23, 1968. This application Apr. 6, 1971, Ser. No. 131,772
Int. Cl. C11d 1/18
U.S. Cl. 252—544 2 Claims

Disclosed is a method of cleaning carpets and fabrics comprising combining at room temperature a fluorocarbon such as, for example, a fluoromethane, with an aqueous medium, then adding to and mixing with said combination a fatty acid such as, for example, lauric or stearic acid, and an amine such as triethanolamine or triethylamine, which forms an amine soap, and immediately thereafter contacting the fabric material with the cleaning composition so prepared.

3,733,282

EPOXY RESIN MIXTURES CONTAINING HETEROCYCLIC SYSTEMS

Juergen Habermeier, Allschwil, Hans Batzer, Arlesheim, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG., Basel, Switzerland

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,766
Claims priority, application Switzerland, Apr. 1, 1970, 4,792/70
Int. Cl. C08g 45/06
U.S. Cl. 260—830 TW 5 Claims

Epoxide resin mixtures, which at room temperature are stable to storage and do not crystallise, of (a) diglycidyl ethers of binuclear 5-membered or 6-membered, unsubstituted or substituted, oxyalkylated N-heterocyclic compounds which contain two NH groups in the molecule for example 1,6 - bis(1' - glycidyloxyethyl-5',5'-dimethylhydantoinyl)-hexane, and (b) polyglycidyl compounds of the N-heterocyclic series which contain at least one heterocyclic ring, which possesses the —NH—CO— grouping at least once, with at least two glycidyl groups or β-methylglycidyl groups in the polyglycidyl compounds being linked directly to endocyclic nitrogen atoms (for example 1,3-diglycidyl-5,5-dimethylhydantoin).

3,733,283

FLAMEPROOF POLYLACTAM COMPOSITION AND PROCESS FOR ITS MANUFACTURE

Ray B. Duggins, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 10, 1971, Ser. No. 141,953
Int. Cl. C08j 1/24
U.S. Cl. 260—2.5 N 24 Claims

A flameproof polylactam composition containing 20 to 80% by weight of hydrated alumina or hydrated calcium sulfate is manufactured by first heating the filler to a temperature of 100–300° C., mixing the filler with lactam monomer, polymerization catalysts and initiators, and finally heating the mixture under anhydrous conditions to a temperature of 135 to 170° C. for a time sufficient to cause polymerization.

3,733,284

CELLULAR RUBBER OF 1,2-POLYBUTADIENE

Eiichiro Shiratsuchi, Yokkaichi, Satoshi Terashima, Matsugae-machi, and Mitsuo Ichikawa, Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed June 10, 1970, Ser. No. 45,224
Claims priority, application Japan, June 25, 1968, 43/43,623
Int. Cl. C08d 13/10, 5/00
U.S. Cl. 260—2.5 H 2 Claims

As a new matter composition of, a cellular rubber based on 1,2-polybutadiene and a process for preparing same. A very valuable cellular rubber having a fine and uniform cellular structure can be obtained by a single vulcanizing and foaming step when polybutadiene containing a large number of 1,2-configuration units is used as the starting elastomer.

3,733,285

LIGHTWEIGHT STRUCTURAL COMPOSITIONS USING POLYESTER RESINS

George A. Steffy, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,408
Int. Cl. C08j 1/30
U.S. Cl. 260—2.5 B 6 Claims

There is disclosed a composition comprised of expanded polystyrene particles, a copolymerizable mixture of a polyester resin and monovinyl ether monomer, and a hydraulic binder. Other conventional aggregates, such as sand and the like, may be added to the composition.

3,733,286

COMPOSITIONS FOR PIGMENTED PAPER COATINGS WHICH CONTAIN STYRENE-ACROLEIN POLYMERS

David W. Holly, Naperville, and George T. Kekish, Chicago, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,065
Int. Cl. C08g 51/04, 51/06, 51/34
U.S. Cl. 260—17.4 ST 12 Claims

Acrolein-styrene polymers have been found effective as coatings in imparting water resistance to pigmented paper.

3,733,287

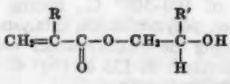
PAINT COMPOSITIONS CAPABLE OF BEING CURED BY IRRADIATION OF ELECTRON RAY

Hiromasa Masuda, Osaka, Yukio Nomura, Nishinomiya, and Toru Fuyuki and Junichi Matsuzaka, Yokohama, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

No Drawing. Filed June 30, 1971, Ser. No. 158,612
Claims priority, application Japan, June 29, 1970, 45/56,786
Int. Cl. C09d 3/26, 5/32
U.S. Cl. 260—21 5 Claims

A paint composition capable of being cured by irradiation of electron ray in a low absorbed dose comprises a

component (I) obtained by reacting triepoxypropyl isocyanurate with a sufficient amount of acrylic acid or methacrylic acid to esterify two or more epoxy groups in said isocyanurate or a resinous component (II) obtained by reacting (A) a reaction product of 1 mole of urea, melamine, benzoguanamine or acetoguanamine with at least 2 moles of formaldehyde, or (B) hexamethoxymethylmelamine with 2 to 6 moles of an α,β-unsaturated ester having the general formula



wherein R and R' are hydrogen or methyl group alone or in admixture with a saturated alcohol, and a resinous component (III) obtained by reacting a reaction product of 1 mole of a natural drying oil or semi-drying oil with 2 to 5 moles of maleic anhydride with 2 to 5 moles of the above described α,β-unsaturated ester based on 1 mole of the drying oil or semi-drying oil.

3,733,288

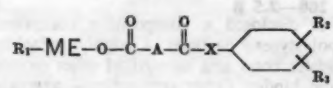
ALKALINE EARTH METAL PHENOXIDE ESTERS AND POLYVINYL CHLORIDE RESIN COMPOSITIONS CONTAINING THE SAME AS STABILIZERS

Motonobu Minagawa, Koshigaya, Tetsuo Sekiguchi, Hasuda-machi, and Naohiro Kubota, Tokyo, Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed July 30, 1970, Ser. No. 59,670
Claims priority, application Japan, Aug. 23, 1969, 44/66,770
Int. Cl. C08f *45/32, 45/62*
U.S. Cl. 260—23 XA **21 Claims**

Alkaline earth metal phenoxide esters are prepared having the following formula:

(I)



wherein R_1 is an organic radical linked to the alkaline earth metal atom ME through oxygen or sulfur, or a a carboxylic or thiocarboxylic acid group, A is a bivalent linking group, X is oxygen or sulfur, and R_2 and R_3 are organic radicals or hydrogen.

Polyvinyl chloride resin compositions having improved resistance to weathering, and a reduced tendency to plate out, and to develop bloom, are also provided, containing these compounds as stabilizers, alone or with other polyvinyl chloride resin stabilizers.

3,733,289

FIRE RETARDANT COATING COMPOSITION

Arnold J. Burns, Collinsville, Ill., and Glen F. Snow, St. Ann, and Howard L. Vandersall, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 48,813, June 8, 1970, which is a continuation of application Ser. No. 739,149, June 24, 1968, now abandoned. This application Aug. 24, 1971, Ser. No. 174,514
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 R **4 Claims**

An improved fire retardant intumescent coating composition for metallic substrates is disclosed; the composition comprises (a) an organic resin, (b) an organic solvent, (c) a carbonific, (d) an ammonium phosphate, (e) asbestos and (f) diatomaceous earth.

3,733,290

POLYAMIDEPOLYAMINE-EPICHLOROHYDRIN WET STRENGTH RESIN

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, South Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,181
Int. Cl. C08g *20/38*
U.S. Cl. 260—29.2 N **9 Claims**

Water-soluble cationic thermosetting polyamidepolyamine-epichlorohydrin resins containing phenylene linkages are prepared by reacting ⅓ to ¾ mol of a non-orthophthalic acid with 1 mol of a water-soluble polyalkylenepolyamine, reacting the resulting monomeric phthalamide with ⅔ to ¼ mol of a C_3–C_{10} saturated aliphatic dicarboxylic acid to form a chain polymer (the total amount of the acids being ¾ to ⅝ mol per mol of the polyamine), and rendering the chain polymer thermosetting by reaction with epichlorohydrin.

3,733,291

FORMATION PROCESS FOR PRODUCING DIELECTRIC ALUMINUM OXIDE FILMS

Robert S. Alwitt, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

No Drawing. Filed July 23, 1971, Ser. No. 165,580
Int. Cl. C23b *9/02*
U.S. Cl. 204—29 **7 Claims**

A process for forming dielectric aluminum oxide films produces a foil system that will not lose capacitance in a working electrolyte for formations of 50 v. or more. An aluminum foil surface has a hydrous oxide formed thereon, and a barrier oxide layer anodically formed through this hydrous film. Any excess hydrous oxide remaining is stripped away with a solution made up of H_3PO_4 and CrO_3; and on this surface the barrier oxide layer is anodically reformed in the same manner as in the original formation. Such a formation process can be used to produce a unit having a much lower equivalent series resistance than prior art units.

3,733,292

HYDROLYSIS OF MALEIC ANHYDRIDE COPOLYMERS

Julius Sirota, South Plainfield, and Irwin J. Davis, Somerville, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 728,758, May 13, 1968. This application Nov. 18, 1971, Ser. No. 200,241
Int. Cl. C08f *27/14, 39/00, 37/14*
U.S. Cl. 260—29.6 H **7 Claims**

Pressure sensitive adhesive composition and substrates coated therewith, said pressure sensitive adhesive compositions comprising lacquers of maleic anhydride containing copolymers wherein at least part of the maleic anhydride moieties have been hydrolyzed to the acid state. A method for effecting said hydrolysis which involves the use of a mixture of water and a water miscible organic solvent as the hydrolyzing reagent is described, said method enabling the production of novel hydrolyzed maleic anhydride copolymers.

3,733,293

WATER AND ABRASION RESISTANT COATINGS HAVING LOW GLOSS FROM AQUEOUS SYSTEMS

John F. Gallagher and Martin Salo, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,019
Int. Cl. C08f *37/18*
U.S. Cl. 260—29.6 RW **8 Claims**

It has been discovered that certain blends of polymers can be applied from an aqueous system to glossy surfaces and dried to yield coated surfaces that have a pleasing

degree of roughness or "matte" and that are water and abrasion resistant, anti-blocking, and essentially completely transparent to visible light.

The coatings are applied to the glossy surface in the form of an aqueous lacquer composition comprising

(a) water;

(b) dissolved in the water, an effective amount of ammonium salt or a copolymer of ethyl methacrylate and methacrylic acid; and

(c) dispersed in the form of a latex through the solution of (b) in (a), an effective amount of a higher molecular weight poly(vinyl acetate).

3,733,294

MANUFACTURE OF SOLUTIONS AND DISPERSIONS OF POLYMERS IN ORGANIC LIQUIDS FROM A POLYMER LATEX

Robert W. Keown, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 30,270, Apr. 20, 1970. This application Nov. 25, 1970, Ser. No. 92,950

Int. Cl. C08f *45/28, 47/20*

U.S. Cl. 260—33.6 A **9 Claims**

Solutions and dispersions of polymers in organic liquids can be manufactured by (A) providing a polymer latex containing an anionic or cationic emulsifier, (B) providing a solution in a water-immiscible organic liquid of a transfer agent which is able to undergo an ion-exchange reaction with said emulsifier as defined in C below, (C) bringing the latex of A and the solution of B into contact with each other so that an ion-exchange reaction occurs between the transfer agent and the emulsifier to form a reaction product whose solubility is such that in a mixture of equal parts by weight of said organic liquid and water, about 90–100% by weight of the reaction product is dissolved in the organic liquid and about 0–10% by weight is dissolved in the water, and (D) removing the water from the composition. When the organic liquid used in (B) is a solvent for the polymer at ordinary temperatures, a polymer solution is obtained by the process.

3,733,295

FLUOROCARBON FILLED CARBOXYNITROSO-POLYBUTADIENE VULCANIZATE

Jon W. Martin, Los Alamitos, Eugene A. Burns, Palos Verdes Peninsula, and Robert A. Meyers, Encino, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,268

Int. Cl. C08f *9/08, 45/04, 45/14*

U.S. Cl. 260—41.5 R **10 Claims**

A decrease in permeability and an increase in chemical resistance of carboxynitroso rubbers can be effected by the addition of small amounts of polybutadiene resins and powdered tetrafluoroethylene polymer filler. Liquid functionally terminated polybutadiene and powdered polytetrafluoroethylene are mixed into a terpolymer containing trifluoronitrosomethane, tetrafluoroethylene, and a small amount of nitrosoperfluorobutyric acid. The mixture is cured in the presence of a peroxide free radical intiator.

3,733,296

STABILIZED POLYCARBONATES

Thomas H. Cleveland and John V. Bailey, New Martinsville, W. Va., assignors to Baychem Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 342, Jan. 2, 1970. This application July 22, 1971, Ser. No. 165,300

Int. Cl. C08g *51/56, 51/58;* **C09k** *3/28*

U.S. Cl. 260—45.7 P **3 Claims**

A halogenated polycarbonate polymer composition containing an effective amount of a metal carbonate selected from the group consisting of barium carbonate, strontium carbonate, and calcium carbonate, or an effective amount of a combination of the metal carbonates and an organic phosphite to stabilize the polymer.

3,733,297

ORGANIC ESTERS AND THEIR USE AS ULTRAVIOLET LIGHT ABSORBERS AND AS HEAT STABILIZERS

Stanley J. Buckman, Kenneth J. Flanagan, John D. Pera, and Lester A. Wienert, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Continuation-in-part of application Ser. No. 800,007, Feb. 17, 1969, now Patent No. 3,629,322, dated Dec. 21, 1971. This application May 7, 1971, Ser. No. 141,442

Int. Cl. C08f *45/58;* **C08g** *51/58;* **C08b** *27/66*

U.S. Cl. 106—178 **23 Claims**

The preparation and use of betabenzoyloxy - 2' - hydroxychalcones as ultraviolet light absorbers and heat stabilizers are described.

3,733,298

METHOD FOR PREPARING POLYCARBORANYLENESILOXANE POLYMERS

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,589

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 E **9 Claims**

Method for the preparation of linear polycarboranylenesiloxane polymers by the condensation of selected hydroxy terminated, silicon-containing carboranes with selected anilinosilanes.

3,733,299

PROCESS FOR THE PREPARATION OF POLYPHENYLENE ETHERS WITH ACTIVATED COPPER-AMINE CATALYSTS

Glenn D. Cooper, Delmar, and James G. Bennett, Menands, N.Y., assignors to General Electric Company

No Drawing. Filed June 10, 1971, Ser. No. 151,933

Int. Cl. C08g *23/18*

U.S. Cl. 260—47 ET **15 Claims**

There is disclosed an improved process for the preparation of high molecular weight polyphenylene ethers by oxidatively coupling a di-ortho-substituted phenolic precursor in a reaction system containing oxygen and a complex catalyst formed from a copper salt and either a primary, secondary or tertiary amine and an alkali metal bromide or alkaline earth metal bromide as an activator for the catalyst. Use of the activator results in the formation of higher molecular weight polymer in a given reaction time or polymer of comparable molecular weight in substantially decreased reaction time.

3,733,300

PROCESS FOR PRODUCING GLASS FIBER-REINFORCED POLYPROPYLENE MOLDED ARTICLE

Toshihito Fujita, Nobuyuki, Takao, and Atsuki Kodama, Fukushima, Japan, assignors to Nito Boseki Co., Ltd., Gonome, Fukushima-shi, Japan

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,361

Claims priority, application Japan, Aug. 15, 1970, 45/71,493

Int. Cl. C08f *45/10*

U.S. Cl. 260—41 AG **10 Claims**

When a stereoregular polypropylene and a silane-treated glass fiber are subjected to heat-molding under pressure in the presence of an organic peroxide and a vinyl compound having at least two carbon to carbon double bonds, the glass fiber is strongly bonded to the polypropylene, whereby a glass fiber-reinforced polypropylene molded article improved in both dry and wet bending strengths is produced.

3,733,301
SEPARATION AND RECOVERY OF CATALYST RESIDUE
Michael M. Modan, 24 Buckingham Drive, Albany, N.Y. 12208
Original application Feb. 16, 1970, Ser. No. 11,747. Divided and this application May 4, 1971, Ser. No. 140,272
Int. Cl. C07c *85/16;* C08g *23/18*
U.S. Cl. 260—47 ET 5 Claims

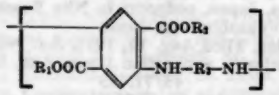
The invention relates to separation and recovery of copper-amine complex catalyst residues from a reaction stream in a process for the formation of polyphenylene ethers by an oxidative coupling polymerization reaction. The process comprises simultaneously terminating the reaction and extracting catalyst residue by contact of the reaction solution with an aqueous acid solution in a countercurrent, liquid-liquid extraction column. The polymer is then recovered from the reaction solution substantially free of catalyst residue. The amine is recovered from the aqueous acid solution by pH adjustment with alkali and may be re-used if desired. The process of the invention is less expensive than prior art procedures and provides more effective catalyst removal than other commercially acceptable methods.

3,733,302
TRIMELLITIMIDO ALKYL SUBSTITUTED AROMATIC CARBOCYCLIC ORGANIC POLYMERS AND A METHOD FOR MAKING SAME
Johann F. Klebe, Henry A. Wroblewski, and Alfred R. Gilbert, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Filed Sept. 1, 1971, Ser. No. 177,176
Int. Cl. C08g *23/20*
U.S. Cl. 260—47 ET 2 Claims

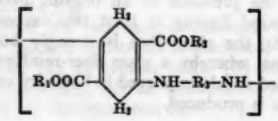
A variety of aromatic carbocyclic polymers substituted with trimellitimido alkyl radicals can be made by effecting reaction between an aromatic carbocyclic organic polymer, for example, polyphenylene oxide, and a hydroxy alkyl trimellitimide, or derivative thereof, in the presence of a Friedel Crafts catalyst, such as boron trifluoride. The trimellitimido alkyl substituted aromatic carbocyclic organic polymers can be electrodeposited onto various substrates to impart improved surface characteristics thereto.

3,733,303
HIGH POLYMER HAVING THE STRUCTURE OF POLY-[IMINO(2,5 - DIALKOXYCARBONYL - 1,4-PHENYLENE) IMINOALKYLENE]
Kazuo Adachi, Akira Tai, and Fukuji Higashi, Tokyo, Japan, assignors to Tekkosha Co., Ltd., Tokyo, Japan
Filed Oct. 18, 1971, Ser. No. 189,876
Claims priority, application Japan, Oct. 20, 1970, 45/91,668
Int. Cl. C08 *33/02*
U.S. Cl. 260—47 CP 7 Claims

A new high polymer comprising recurring structural units of the formula



is obtained by the oxidation of high polymer comprising recurring structural units of the formula



which may be derived from a reaction between dialkylsuccinyl succinates and aliphatic diamines, and said new high polymer compound is a thermo plastic resin being characterized by spectroscopic absorption IR spectra at the vicinities of 2.80, 5.80, 6.49, 11.5 and 12.7μ, which is conveniently employed as a coating for metals, films, sheets and as various shaped moldings.

3,733,304
ARYL SULFATE POLYMERS AND METHODS FOR THEIR PRODUCTION
William Charles Firth, Jr., Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Apr. 1, 1971, Ser. No. 130,528
Int. Cl. C08g *33/14*
U.S. Cl. 260—49 10 Claims

A method for the production of compounds having the formula

$$F—SO_3—A—SO_3—F$$

wherein A is an aromatic radical, polymers produced from said compounds and methods for the production of said polymers, are disclosed.

3,733,305
CURABLE LOW SOFTENING EPOXY RESINS CONTAINING BISPHENOL S
Peter Loewrigkeit, Wyckoff, and James C. Spitsbergen, Franklin Lakes, N.J., assignors to Witco Chemical Corporation, New York, N.Y.
No Drawing. Filed Feb. 3, 1971, Ser. No. 113,700
Int. Cl. C08g *30/00, 30/08*
U.S. Cl. 260—49 7 Claims

Catalyst-free, curable, substantially linear thermosetting epoxy resins having low softening points and good melt viscosity stability, are made available by the reaction of a bis(hydroxyphenyl)sulfone (bisphenol S) with a bis(glycidyloxyphenyl)sulfone (diepoxy bisphenol S) in the hot molten state, without catalyst.

3,733,306
PREPARATION OF POLYARYL ESTERS
Wolfgang Wolfes, Mondorf, and Erich Behr, Troisdorf, Germany, assignors to Dynamit Nobel AG, Troisdorf, Postfach, Germany
No Drawing. Filed July 14, 1971, Ser. No. 162,714
Claims priority, application Germany, July 18, 1970, P 20 35 846.7
Int. Cl. G08g *17/003*
U.S. Cl. 260—61 7 Claims

In the preparation of a polyaryl ester by condensing at least one aromatic dicarboxylic acid chloride with at least one dihydric phenol in the presence of metallic magnesium as catalyst to produce HCl and a polyaryl ester, the improvement which comprises dissolving said acid chloride and phenol in an inert organic solvent and contacting said solution with the metallic magnesium in subdivided form at a temperature between about 170 and 280° C. Advantageously the preheated solution is trickled through a bed of magnesium chips in a heated pipe with a contact time of less than about 10 minutes. The conversion in the pipe exceeds 80%, based on HCl formed, and the product may be further condensed in known manner to viscosities in excess of 1.

3,733,307
COPOLYMERS OF POLYPHENYLENE ETHERS
Glenn D. Cooper, Delmar, N.Y., assignor to General Electric Company
No Drawing. Filed Oct. 14, 1971, Ser. No. 189,193
Int. Cl. C08g *23/16*
U.S. Cl. 260—61 5 Claims

Copolymers with repeating units of (a) 2,6-diaryl-1,4-phenylene ethers and (b) 2,6-dihalo-1,4- or 3,5-dihalo-1,2-phenylene ether units are provided by free radical initiated polymerization of the corresponding 2,6-disubstituted-4-halophenolates. The novel copolymers are melt

processable into articles having extended high temperature resistance and those containing at least 15 mole percent of the 2,6- or 3,5-dihalo-component (b) are flame resistant.

3,733,308

HIGHLY ORDERED AZO-AROMATIC POLYIMIDES

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 196,704, Nov. 10, 1971, which is a division of application Ser. No. 46,454, June 15, 1970, which in turn is a continuation-in-part of abandoned application Ser. No. 792,823, Jan. 21, 1969. This application Aug. 14, 1972, Ser. No. 280,607

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **5 Claims**

A class of ordered fiber and film forming aromatic polyamide acids and corresponding polyimides derived from certain symmetrical aromatic azo diamines have been found to possess excellent thermal and mechanical properties useful in fibers, films and other shaped articles.

3,733,309

BIAXIALLY ORIENTED POLY(ETHYLENE TEREPHTHALATE) BOTTLE

Nathaniel Convers Wyeth, Mendenhall, Pa., and Ronald Newman Roseveare, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 885,853, Dec. 17, 1969. This application Nov. 30, 1970, Ser. No. 93,571

Int. Cl. B29c *5/06*

U.S. Cl. 260—75 T **14 Claims**

A hollow, biaxially oriented, thermoplastic article, particularly a bottle, prepared from polyethylene terephthlate wherein said article has an inherent viscosity of at least 0.55, a density of about 1.331 to 1.402 and a ratio of article weight in grams to volume in cubic centimeters of about 0.2 to 0.005:1. Such articles have excellent strength properties, are impact resistant, and are capable of holding liquids under pressures as high as about 100 p.s.i.g. at a temperature of about 50° C. without significant deformation making such articles useful in bottling liquids under pressure such as beer, carbonated beverages, or aerosols.

3,733,310

PROCESS FOR THE MANUFACTURE OF POLYURETHANE SPINNING AND COATING SOLUTIONS

Roxburgh Richmond Aitken, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 52,762, July 6, 1970. This application Feb. 22, 1972, Ser. No. 228,259

Claims priority, application Great Britain, July 24, 1969, 37,281/69

Int. Cl. C08g *22/14, 22/16*

U.S. Cl. 260—77.5 AQ **3 Claims**

A process for the manufacture of a solution of a polyurethane containing isocyanate-reactive groups which comprises reacting together in an inert solvent an essentially linear hydroxyl-ended polymer, an at least trifunctional polyol and an excess of an organic diisocyanate to form an isocyanate-ended prepolymer, then adding a dihydric alcohol or a mixture thereof with water and allowing reaction to proceed until the solution has attained a viscosity within a predetermined range, and finally adding a polyfunctional isocyanate-reactive compound in which the isocyanate-reactive groups are of different reactivity in amount such that there is one molecule of such compound for each isocyanate group still present.

3,733,311

THERMOSET RESIN FROM GLYCIDOL AND A CYCLIC ANHYDRIDE

Richard A. Hickner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 721,076, Apr. 12, 1968, which is a continuation-in-part of application Ser. No. 320,833, Nov. 1, 1963, both now abandoned. This application Oct. 16, 1970, Ser. No. 81,602

Int. Cl. C08g *17/04, 51/10*

U.S. Cl. 260—78.4 EP **12 Claims**

The reaction of glycidol with a cyclic polycarboxylic acid anhydride produces a thermoset polyester type resin which does not yield water as a by-product of the reaction.

3,733,312

POLYMER COMPOSITIONS

Gerbrand Deetman, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,322

Int. Cl. C08f *27/08*

U.S. Cl. 260—78.5 T **10 Claims**

Novel quaternary salt modified esters of maleic anhydride copolymers are film forming resins useful, for example, as holding agents in hair sprays.

3,733,313

HALOHYDRIN SYNTHESIS

Arnold N. Johnson, Wayne, and Walter Nudenberg, West Caldwell, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,607

Int. Cl. C07c *29/00;* **C08f** *15/40*

U.S. Cl. 260—80.78 **12 Claims**

Halohydrins (especially chloro- and bromo-hydrins) are prepared from olefins having a double bond not activated by an adjacent aromatic radical, by reaction with a dilute solution of hydrogen peroxide and the corresponding aqueous hydrogen halide. Examples of starting olefins are cyclohexene, butadiene, and polybutadiene, to make, respectively, 2-halocyclohexanol, the three isomeric dihalobutanediols, and poly (3-halo-2-hydroxytetramethylene). Halohydrin of EPDM rubber may be prepared by the process. The EPDM halohydrin can be cured by the action of diisocyanates or other reagents.

3,733,314

PURIFICATION OF AMORPHOUS POLYOLEFINS

Stanley J. Marwil and Roy C. Harrison, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,434

Int. Cl. C08f *3/02, 3/08*

U.S. Cl. 260—93.7 **13 Claims**

Crude amorphous polyolefins are purified in a sequential treatment process with a reducing type inorganic compound, a polyphosphate, and an alcohol. The amorphous polyolefin is recovered as a safe-to-handle, essentially color-free and catalyst residue-free, useful material.

3,733,315

UNSATURATED CARBOXYLIC ESTERS

Fred Smeets, Tienen, Belgium, assignor to N.V. La Citrique Belge, Pastorijstraat, Tienen, Belgium

Original application July 8, 1966, Ser. No. 563,816, now Patent No. 3,586,715, dated June 22, 1971. Divided and this application Nov. 24, 1969, Ser. No. 877,598

Claims priority, application Great Britain, July 19, 1965, 30,640/65

Int. Cl. C07c *69/52*

U.S. Cl. 260—234 R **8 Claims**

Unsaturated ester materials prepared by heating an alkaline-earth metal salt of citric acid, hydrolysing the reaction product to form the corresponding organic acid

material, and esterifying the acid. The compounds are sulfonated to produce surface active agents, ion exchange materials and detergents.

3,733,316

NOVEL 17β-(TETRAHYDROPYRAN-4-YLOXY)STEROIDS

John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Apr. 20, 1971, Ser. No. 135,757

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R 17 Claims

Novel 17β-(tetrahydropyran-4-yloxy) steroid ethers are disclosed. Specifically, 17β-(tetrahydropyran-4-yloxy) ethers of androstane and estrane series are disclosed together with a method for their preparation and a discussion of their unexpected biological activity, inter alia, as anabolic/androgenic agents.

3,733,317

METHOD FOR THE PREPARATION OF OMEGA-LACTAMS AND THEIR LACTAMIZABLE PRECURSORS

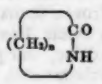
Luigi Giuffre, Milan, and Giancarlo Sioli, Como, Italy, assignor to Snia Viscosa Societá Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed June 30, 1970, Ser. No. 51,268

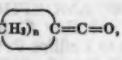
Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A 12 Claims

There is described a process for the preparation of omega-lactams having the general formula:



wherein n= from 2 to 13, and/or of their lactamizable precursors, which may be cycloaliphatic oximes or cycloaliphatic nitroso derivatives, monomers or dimers characterized by the fact that the corresponding cyclomethylene ketene, having the general formula



where n has the aforementioned value, is subjected to nitrosation with a nitrosating agent of the formula NOX, where X can be —HSO_4, —Cl, —NO_2, —OR (in which R indicates an alkyl or aryl organic substituent), at a temperature comprised between −60° C. and +100° C.

3,733,318

21-ORTHOESTERS OF CORTICAL STEROIDS AND METHODS OF PREPARING SAME

Michael Marx, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Mar. 23, 1972, Ser. No. 237,506

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D 19 Claims

21-orthoesters of 16α- and 16β-hydro or methyl cortical steroids and 21-orthoesters of 16α,17α-cyclic acetal cortical steroids. The method of preparing such orthoesters comprises reacting the corresponding 21-hydroxy cortical steroid with an excess of an alkyl orthoester in the presence of a catalytic amount of a strong acid. These 21-orthoesters of cortical steroids have utility as anti-inflammatory agents in the treatment of mammals.

3,733,319

NITROTHIOPHENES

David W. Henry and William T. Colwell, Jr., Menlo Park, Calif., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Jan. 7, 1970, Ser. No. 1,301

Int. Cl. C07d *63/12*; A61k *27/00*

U.S. Cl. 260—240 A 2 Claims

The disclosure describes eighteen analogs of 5-nitrothiophene 2-carboxaldehyde. The compounds are useful in the prevention and treatment of malaria.

3,733,320

ANTIBIOTIC PURIFICATION PROCESSES

Seemon H. Pines, Murray Hill, Norman C. Jamieson, Rahway, and Matthew A. Kozlowski, South River, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,706

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 7 Claims

Fermentation broths or impure solutions containing 7-β - (D-5-amino-5-carboxyvaleramido)-3-(carbamoyloxymethyl) - 7-methoxy-3-cephem-4-carboxylic acid, a substance having antibiotic activity against gram-negative and gram-positive microorganisms, are purified using (a) passage through a cationic exchange resin, (b) elution with a weak base, (c) passage through a weakly basic anionic exchange resin, (d) washing the column resin of stage c with a solution of dilute lower alkanoic acid, and (e) elution with a weak base or a phosphate buffer solution. The yield of product is greatly increased over prior purification processes.

3,733,321

1,4-BENZOTHIAZIN-3-ONES

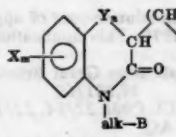
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 6, 1971, Ser. No. 160,066

Int. Cl. C07d *93/12*, *87/00*, *27/00*

U.S. Cl. 260—243 R 2 Claims

Anti-inflammatory agents of the formula



(I)

wherein X may be hydrogen, halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, hydroxy, alkylthio, haloalkylthio, nitro, alkylsulfonyl, amino, alkanoylamino, or mono- or dialkylamino wherein any of the foregoing alkyl or substituted alkyl radicals may contain up to 8 carbon atoms; m may be 0, 1, 2, 3 or 4; Y may be —O—, —S—, —SO—, —SO_2—, —CH_2—, or —CH_2CH_2—; n may be 0 or 1; alk may be a straight or branched alkyl radical of up to 6 carbon atoms; B may be a basic nitrogen containing radical; p may be 1, 2 or 3; and Ar may be phenyl, X-substituted phenyl, pyridyl, thienyl, furyl, naphthyl, or alkylenedioxyphenyl; and pharmaceutically acceptable

acid-addition or quaternary ammonium salts thereof and N-oxides and pharmaceutically acceptable acid-addition salts thereof.

3,733,322

N - (AMINODIALKYL)THIENYL[3,2-b]THIOPHENE-2-CARBOXAMIDES AND METHODS OF PREPARATION

William Blythe Wright, Jr., Woodcliff Lake, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 16, 1971, Ser. No. 153,864
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 6 Claims

The preparation of N-(aminoalkyl)-thieno[3,2-b]thiophene-2-carboxamides by the reaction of a thieno[3,2-b]thiophene-2-carbonyl chloride with an alkylenediamine derivative is described. Other methods of preparing N-(aminoalkyl)thieno[3,2-b]thiophene - 2 - carboxamides are described. The latter products are useful for their antidepressant, anti-inflammatory and analgesic properties.

3,733,323

2-MERCAPTOQUINOXALINE - 1-OXIDES, SALTS THEREOF AND 2 - (1-OXOQUINOXALINYL) DISULFIDES

Miriam Lois Douglass, Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,413
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R 19 Claims

2-mercaptoquinoxaline-1-oxides, salts thereof and 2-(1-oxoquinoxalinyl) disulfides are useful antimicrobial agents, active against gram-negative and gram-positive bacteria and fungi, e.g., *Escherichia coil, Bacillus substilis, Micrococcus pyogenes* var. *aureus, Tricophyton mentagrophytes,* and *Pityrosporum ovale.*

The antimicrobial compounds are useful alone, usually in aqueous solution, as microbicides or microbistats. They may also be included as constituents of hairdressings or shampoos because they are effective microbicides, even in the presence of oily materials, such as the sebum normally secreted by the human scalp.

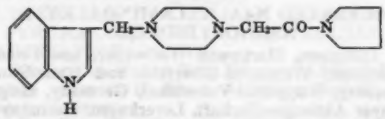
3,733,324

PYRROLIDINOCARBONYLMETHYL PIPERAZINO METHYL INDOLE

Claude P. Fauran, Michel J. Turin, and Guy M. Raynaud, Paris, and Bernard M. Pourrias, Meudon-La-Foret, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France

No Drawing. Filed June 4, 1971, Ser. No. 150,224
Claims priority, application France, June 10, 1970, 7021223
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BC 1 Claim

A compound of the formula



The compound is prepared by reacting indole with N-(pyrrolidinocarbonylmethyl) piperazine and trioxymethylene (paraformaldehyde).

The compound possesses anti-hypertensive properties.

3,733,325

PREPARATION OF AMINOETHYLPIPERAZINE

Ernest Leon Yeakey, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,920
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 ST 6 Claims

A novel continuous process for producing 1-(2-aminoethyl)piperazine is provided by catalytic hydrogenation of nitrilotriacetonitrile.

3,733,326

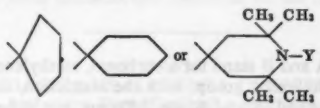
INHIBITION OF THE POLYMERIZATION OF VINYL MONOMERS

Keisuke Murayama, Toshimasa Toda, and Eiko Mori, Tokyo, Japan, assignors to Sankyo Company Limited

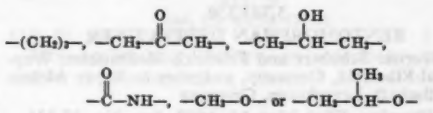
No Drawing. Filed Mar. 10, 1971, Ser. No. 123,077
Int. Cl. C07d *31/20*
U.S. Cl. 260—290 V 4 Claims

Vinyl monomer compositions inhibited against the polymerization thereof by having incorporated therein a sufficient amount to effectively inhibit said polymerization of a compound having the formula

wherein R_1 and R_2 may be the same or different and each represents an alkyl group of 1–11 carbon atoms, phenyl group or hydrogen atom, privided that, where one of the R_1 and R_2 is hydrogen atom, another is an alkyl group of 1–11 carbon atoms or phenyl group or they may, together with the carbon atom to which they are attached, form the group



R_3 and R_4 have the same meanings as the R_1 and R_2; X represents the group



and Y represents hydrogen atom or hydroxyl group.

3,733,327

CATALYTIC OXYDEHYDROGENATION OF ALKYL AROMATICS AND ALKYL PYRIDINES

G. Edwin Vrieland, Midland, Mich., and Henry Nelson Beck, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 28, 1971, Ser. No. 157,722
Int. Cl. C07c *5/18;* C07d *31/20*
U.S. Cl. 260—290 V 17 Claims

Oxydehydrogenation of alkyl aromatic compounds including nitrogen heterocyclics having at least one C_2–C_6 alkyl side chain having at least one hydrogen atom on the carbon atom of the alkyl group attached to the aromatic ring and 1–2 rings, by passing a mixture of the alkyl aromatic compound and an oxygen containing gas over a cerium phosphate or cerium-zirconium phosphate catalyst at 400–650° C. converts said C_2–C_6 alkyl groups to alkene derivatives, with good selectivity and conversion.

3,733,328

PYRAZOLO[3,4-b]PYRIDINE-5-CARBOXAMIDES

Hans Hoehn, Tegernhein, Germany, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 62,674, Aug. 10, 1970. This application Nov. 4, 1971, Ser. No. 195,808
Int. Cl. C07d *57/04*
U.S. Cl. 260—293.6 5 Claims

New 5-carboxamides of pyrazolo[3,4-b]pyridines and salts thereof are useful as ataractic, analgesic and anti-inflammatory agents.

3,733,329
PROCESS FOR THE PREPARATION OF 2- AND 3-AZA-CHOLESTANE-DERIVATIVES

Zoltan Tuba and Maria Bor, nee Szabo, Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R. T., Budapest, Hungary

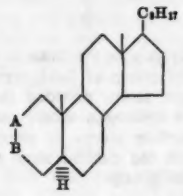
No Drawing. Filed June 14, 1971, Ser. No. 152,973

Claims priority, application Hungary, June 18, 1970, 395

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **7 Claims**

The invention relates to a process for the preparation of cholestane derivatives with a nitrogen atom in 2 or 3 position, having the general formula



(I)

wherein A and B stand for a carbonyl, methylene or imino or N-methylimino group, with the restriction, that within one compound A and B are different, but either A or B stands for an imino or N-methylimino group in each case.

3,733,330
BENZOMORPHAN DERIVATIVES

Hans-Werner Schubert and Friedrich Hoffmeister, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

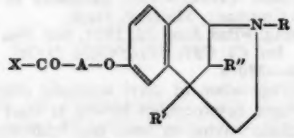
No Drawing. Filed May 14, 1970, Ser. No. 37,331

Claims priority, application Germany, May 17, 1969, P 19 25 296.1

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **9 Claims**

Benzomorphanes of the formula:

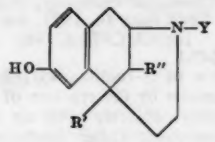


wherein

R is methyl, cyclopropylmethyl or cyclobutylmethyl;
R′ and R″ are the same or different, and are straight or branched chain hydrocarbons of 1 to 5 carbon atoms;
X is OH, OR‴ or

wherein

R‴ is a straight or branched chain, saturated or unsaturated hydrocarbon of 11 to 11 carbon atoms;
R^4 and R^5 are the same or different, and are hydrogen, a straight or branched chain, saturated hydrocarbon of ! to 4 carbon atoms, or R^4 and R^5 together with the nitrogen atom form a 5- or 6-membered heterocyclic ring which may have oxygen as a second heteroatom; and
A is a bivalent, straight or branched chain, saturated or unsaturated hydrocarbon of 1 to 10 carbon atoms, said hydrocarbon substituted by 1 or more phenyl moieties, or said hydrocarbon substituted by 1 or more alkyl, alkoxy, halogen, nitro or acylamino substituted phenyl moieties, and pharmaceutically acceptable non-toxic salts thereof are produced by reacting a benzomorphan of the formula:



wherein

R′ and R″ are as above defined, and
Y is hydrogen, methyl, cyclopropylmethyl, cyclobutylmethyl, or the moiety —CO—R^6,

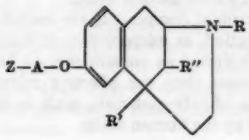
wherein

R^6 is cyclopropyl or cyclobutyl, in the presence of an acid-binding agent, or by reacting said benzomorphan in the form of a metal or ammonium salt with a reactive ester of a hydroxy compound of the formula:

Z—A—OH

wherein

A is as above defined, and
Z is CO—X or CN to give a compound of the formula.



wherein

R, R′, R″, A and Z are as above defined, and in the case where Z is CN, converting this group into the corresponding CO—H group and if Y is hydrogen or —CO—R^6, converting said hydrogen or said moiety into a methyl, cyclopropylmethyl or cyclobutylmethyl moiety.

The benzomorphanes are useful as analgesics.

3,733,331
ACYLATED N-(ALKYLAMINOALKYL)-AMINOPYRIDINES

Rudolf Hiltmann, Hartmund Wollweber, and Friedrich Hoffmeister, Wuppertal-Elberfeld, and Hans-Gunther Kroneberg, Wuppertal-Vohwinkel, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

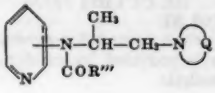
No Drawing. Continuation-in-part of abandoned application Ser. No. 761,794, Sept. 23, 1968. This application Nov. 30, 1970, Ser. No. 93,844

Claims priority, application Germany, Sept. 25, 1967, P 19 70 929.8

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **12 Claims**

Novel and improved analgetics are provided of the formula:



in which R''' is hydrogen or alkyl or alkenyl of 1–4 carbon atoms, and

is azabicyclo substituted or not by one or more alkyl groups or such having a double bond, and unacylated intermediates for said analgetics.

3,733,332

HALOGENATED CYANOACETIC ACID PIPERIDIDE

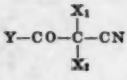
Werner Toepfl, Basel, and Hans-Rudolf Hitz, Muttenz, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Original application July 30, 1965, Ser. No. 476,192, now Patent No. 3,557,184. Divided and this application Sept. 8, 1970, Ser. No. 70,139

Int. Cl. C07d *29/32*

U.S. Cl. 260—293.86 2 Claims

New pesticidal preparations are provided which contain as the active component a compound represented by the formula:



wherein X_1 and X_2 represent hydrogen or halogen, and Y represents the radical —OR where R stands for an alkyl or chloralkyl radical containing up to 18 carbon atoms or the radical.

in which R_1 and R_2 are identical or different and each represents hydrogen or alkyl, alkoxyalkyl, dialkylaminoalkyl, cyclohexyl, or for a phenyl radical or for the radical of the formula

or, together with the nitrogen atom, form a morpholine, piperidine or piperazine ring which latter is substituted by the radical —CO—CCl_2—CN together with a suitable carrier. The preparation may contain one or several of the following additives: solvents, diluents, dispersants, wetting agents, adhesives and other pesticides.

3,733,333

SUBSTITUTED 1 - AMINO 4,9 - DIHYDRO-3H-PYRIDO[3,4-b]INDOLES AND PROCESS FOR THEIR PREPARATION

Otto Behner and Walter Puls, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,991

Claims priority, application Germany, May 2, 1970, P 20 21 519.4

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 A 15 Claims

4,9-dihydro-3H-pyrido[3,4-b]indoles bearing a substituted amino group in the 1-position and their salts possess antihyperglycemic properties. The compounds are prepared through treatment of certain reactive derivatives of 1-oxo-2,3,4,9-tetrahydro-1H-pyrido[3,4-b]indoles with an amine or through cyclization of an appropriately substituted 3-(2-ureidoethyl)-indole or the corresponding thioureido compound. A typical embodiment is 1-(3,5-dimethylpyrazol-4-ylamino) - 4,9 - dihydro-3H-pyrido[3,4-b]indole.

3,733,334

1,3,2-OXAZABORINIDES AND METHOD FOR PREPARING THE SAME

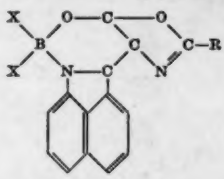
Thurairajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 732,045, May 27, 1968, now Patent No. 3,621,023, dated Nov. 16, 1971. This application Apr. 19, 1971, Ser. No. 135,361

Int. Cl. C07d *85/36*

U.S. Cl. 260—307 F 2 Claims

Compounds of the formula



wherein both X's are the same and represent either fluoro or acetoxy and R represents methyl, phenyl or acetylaminophenyl. These compounds are characterized by affinity for polyesters, nylon and acetate when applied by disperse dyeing methods and fluoresce on the fiber.

3,733,335

INDAZOLONE MAGENTA COUPLERS

Brian Anderson, Bury, England, assignor to Ilford Limited, Ilford, Essex, England

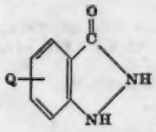
No Drawing. Filed Jan. 6, 1971, Ser. No. 104,510

Claims priority, application Great Britain, Jan. 7, 1970, 823/70

Int. Cl. C07d *49/04*

U.S. Cl. 260—310 A 1 Claim

This application describes an indazolone magenta coupler of the formula:



where Q is either a group —NH—R wherein R is an acyl group containing a nitrogen atom to which there is attached either directly or via a phenyl group an alkyl residue of at least 10 carbon atoms, together with a free carboxylic acid group or a group which can liberate a free carboxylic acid group or Q is a group —N<(T) wherein T is an acyl group which is attached to the nitrogen atom by a cyclic imide linkage, the group T containing an alkyl residue of at least 10 carbon atoms, the ring to which Q is attached optionally containing other substituents.

3,733,336

PROCESS FOR THE PRODUCTION OF 5,6-DIHYDRO-2H-THIOPYRAN-3-CARBOXALDEHYDE

Hans Wagner and Klaus W. Udluft, Konstanz, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,160

Claims priority, application Germany, Apr. 17, 1969, P 19 19 504.1

Int. Cl. C07d *65/08*

U.S. Cl. 260—327 TH 13 Claims

5,6-dihydro-2H-thiopyran-3-carboxaldehyde is produced by reacting acrolein with hydrogen sulfide in the presence of a small amount of a basic or acidic catalyst followed by treating the reaction product with a large amount of an acid.

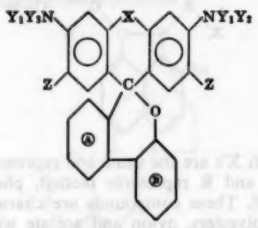
3,733,337

DIAMINO-XANTHENE (OR THIOXANTHENE)-SPIRODIBENZOPYRANES

Heinz Balli, Riehen, and Ulf Krueger, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,879
Claims priority, application Switzerland, Dec. 23, 1969, 19,172/69; Nov. 3, 1970, 16,229/70
Int. Cl. C07d *7/42, 65/16*
U.S. Cl. 260—328 7 Claims

A 3',6'-diamino-xantheno (or thioxantheno)-9'-spiro-6-dibenzo-[b,d]-pyrane compound of General Formula 1



(I)

wherein X represents an oxygen atom or a sulphur atom, Y_1 and Y_2, which may be the same or different, each represents an alkyl or aryl radical and Z represents a hydrogen atom or an alkyl group, and wherein the benzene rings A and B may contain alkyl groups, halogen atoms and sulphonic acid groups as substituents.

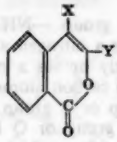
3,733,338

1-OXO-ISOCHROMENES

Masayasu Kimura and Masaya Kokubo, Toyama-ken, Japan, assignors to Ikeda Pharmaceutical Industry Co., Ltd.

No Drawing. Filed July 29, 1971, Ser. No. 167,473
Int. Cl. C07d *7/18*
U.S. Cl. 260—343.2 R 4 Claims

Compounds of th formula



wherein X is a phenyl group having a substituent selected from alkoxy, halogen, hydroxy or amino groups, and Y is a hydrogen atom or a carboxyl group, are useful as medicines for humans and animals because of their high anti-allergic properties.

3,733,339

DISUBSTITUTED PROPIONAMIDES

Bruce Wayne Horrom, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 684,492, Nov. 20, 1967. This application Oct. 5, 1970, Ser. No. 78,283
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 1 Claim

A novel series of N-substituted 3-halo-2,2-dimethylpropionamides. The compounds are useful as intermediates for preparing substituted 1-(phenylisopropyl)-3,3-dimethyl azetidines. These azetidine compounds exhibit marked activity as anoretic agents.

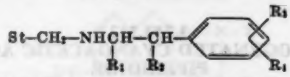
3,733,340

BASIC SUBSTITUTED KETOSTEROIDS

Kurt Thiele, Frankfurt am Main, and Klaus Posselt, Bergen-Enkheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,619
Int. Cl. C07c *169/20, 169/32*
U.S. Cl. 260—397.4 12 Claims

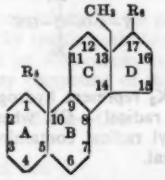
Compounds are prepared having the formula



(I)

where R_1 is hydrogen or lower alkyl, R_2 is hydrogen or hydroxyl, R_3 and R_4 are hydrogen, halogen, hydroxy, lower alkyl or lower alkoxy and St is a steroid radical which is connected to the methylene group by the grouping

of the ring A, B, C or D or by a side chain R_5, said steroid having the general formula



(II)

which is derived from etiocholane or etioallocholane series, the connection with the basic portion of the molecule being either a ring carbon atom or the C–17 side chain, the steroid being either unsubstituted or containing one or more hydroxy, lower alkoxy, lower alkyl, or acyloxy groups, e.g. lower alkanoyloxy or benzoyloxy and containing either no double bonds or containing one or more double bonds, ring A or both rings A and B can be aromatic, R_5 is methyl or a double bond and R_8 either forms a keto group with the No. 17 ring carbon atom or is hydrogen or an alkyl group of 1 to 12 carbon atoms, or alkenyl or alkinyl of 2 to 12 carbon atoms. The compounds can be prepared as optically active or diastereometric forms or as salts. They are useful primarily in the pharmaceutical field, e.g. to increase coronary blood flow.

3,733,341

STABILIZING THE COLOR OF NEO-CARBOXYLIC ACIDS

Robert Drogin, Linden, N.J., assignor to Esso Research and Engineering Company

Filed Nov. 19, 1968, Ser. No. 776,929
Int. Cl. C11b *5/00*
U.S. Cl. 260—398.5 8 Claims

The color stability of C_5 to C_{13} neo-acids in storage is achieved by the addition of small amounts of a material selected from the group consisting of 2,6-di-tertiary butyl p-cresol, hydroquinone monomethyl ether, 2,6-di-octadecyl p-cresol and p,p'-di-octyl diphenylamine.

3,733,342

SEPARATION OF ACIDS

Bertram Yeomans, Hessle, England, assignor to BP Chemicals Limited, London, England

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,006
Claims priority, application Great Britain, Dec. 17, 1969, 61,393/69
Int. Cl. C09f *5/10*
U.S. Cl. 260—419 11 Claims

Di-neo acids and mono-neo acids are separated by treating a solution containing mono- and di-neo acids in

a water-immiscible organic solvent with an aqueous alkaline solution to extract the di-neo acid.

3,733,343

CONTINUOUS PROCESS FOR THE SEPARATION OF MIXTURES OF FATTY ACID ESTERS OF DIFFERENT MELTING POINTS

Helmut Hartmann, Langenfeld, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Dec. 30, 1970, Ser. No. 102,712

Claims priority, application Germany, Oct. 30, 1970, P 20 53 257.4

Int. Cl. C09f *5/10*

U.S. Cl. 260—428 **8 Claims**

The invention relates to an improvement of the known continuous process for the separation of solid and liquid fatty acid esters, in which the starting mixture by treating with an aqueous wetting agent solution is converted to a dispersion of liquid fatty acid esters and solid fatty ester particles, the formed dispersion is separated by centrifuging into two phases of different specific weights, the lighter phase consists substantially of the liquid fatty acid esters and the heavier phase of a dispersion of the solid fatty ester particles in the aqueous wetting agent solution. After separation of this suspension the wetting agent solution is returned to the process. The improvement consists in withdrawing a part of the recycling wetting agent solution from the cycle and replacing it with fresh wetting agent solution.

3,733,344

WITHDRAWN

3,733,345

ORGANO-MOLYBDENUM PHOSPHORODITHIOATES AND METHOD FOR PRODUCING SAME

Vincent Chiola, Towanda, Phyllis R. Dodds, Wysox, and Tai K. Kim, North Towanda, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Continuation-in-part of application Ser. No. 757,786, Sept. 5, 1968. This application Aug. 10, 1970, Ser. No. 62,667

Int. Cl. C07f *11/00*

U.S. Cl. 260—429 K **4 Claims**

Organo-molybdenum phosphorodithioates which contain the desired organic, molybdenum, phosphorus and sulfur groups useful as additives to an oil of lubricating viscosity, are disclosed and a process for preparing same, which process comprises contacting an aqueous solution containing the phosphorodithioic acid and an organic solvent, thereby extracting the molybdenum into the organic solution and thereafter removing the organic solvent to thereby recover the molybdenum phosphorodithioates.

3,733,346

WERNER CHROMIUM COMPLEXES AND METHOD FOR THEIR PREPARATION

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,044

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 C **13 Claims**

A Werner complex composition has trivalent chromium atoms coordinated with acido groups and fluorine atoms. The acido groups are from saturated aliphatic dicarboxylic acids having less than six carbon atoms and that may contain hydroxyl groups, but not more than three hydroxy groups. The complexes are characterized by a specific range for the ratio of both the chromium atoms to acido groups as well as chromium atoms to fluorine atoms. The complex composition is useful in preparing chromium plating paths that have a bright plating range that is desirably extended over a broad range for decorative chromium plate.

3,733,347

WERNER CHROMIUM COMPLEXES AND METHODS FOR THEIR PREPARATION

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,046

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 C **13 Claims**

A Werner complex composition has trivalent chromium atoms coordinated with acido groups and fluorine atoms. The acido groups are from aliphatic, hydroxy-containing, monocarboxylic acids having less than six carbon atoms and not more than three hydroxyl groups. The complexes are characterized by a specific range for the ratio of both the chromium atoms to acido groups as well as chromium atoms to fluorine atoms. The complex composition is useful in preparing chromium plating baths that have a bright plating range that is unique in the history of decorative chromium plating.

3,733,348

NICKEL COMPLEXES FROM AROMATIC OXIMES CONTAINING PHENOLIC GROUPS

Peter James Briggs and Ronald James Hurlock, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Original application Oct. 17, 1966, Ser. No. 586,947. Divided and this application Jan. 27, 1969, Ser. No. 807,168

Claims priority, application Great Britain, Oct. 21, 1965, 44,655/65

Int. Cl. C07f *15/04;* **C08f** *45/62*

U.S. Cl. 260—439 **3 Claims**

Nickel chelate compounds of substituted orthohydroxy phenyl, substituted orthohydroxy-α-naphthyl and substituted orthohydroxy - β - naphthyl ketoximes are prepared from the ketoxime in which the oxime group is in the syn-position with respect to the group other than the substituted orthohydroxy-phenyl or -naphthyl group by reaction with nickel salts.

3,733,349

FLUOROCARBON CYANATES

Basil L. Loudas, St. Paul, and Herward A. Vogel, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Original application July 1, 1968, Ser. No. 741,308, now abandoned. Divided and this application Mar. 30, 1971, Ser. No. 129,559

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 AL **7 Claims**

Methylol-terminated fluorocarbons are reacted with cyanogen halides to produce fluorocarbon cyanates which can be polymerized to produce polyfluorocyanurates having chemical resistance and thermal stability and useful in making shaped plastic or elastomeric articles.

3,733,350

LOW OUTGASSING POLYDIMETHYLSILOXANE MATERIAL AND PREPARATION THEREOF

Benjamin Seidenberg, Baltimore, Md., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Feb. 15, 1972, Ser. No. 226,551

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R **7 Claims**

A fluid polydimethylsiloxane resin having improved outgassing properties in cured state consisting essentially

of: a first polydimethylsiloxane oligomer having a weight average molecular weight, $\overline{M}_w$, of about 1800 to 2900 and a number average molecular weight, $\overline{M}_n$, of about 1500 to 2500; a second polydimethylsiloxane oligomer having a weight average molecular weight, $\overline{M}_w$ of about 10,000 to 12,000 and a number average molecular weight $\overline{M}_n$ of 19,500 to 21,500; and a third polydimethylsiloxane oligomer having a weight average molecular weight, $\overline{M}_w$, of about 1,780,000 to 1,800,000 and a number average molecular weight, $\overline{M}_n$, of about 850,000 to 870,000.

The fluid polydimethylsiloxane resin of the invention is obtained by pouring to a height of up to about 2 inches a starting polydimethylsiloxane resin such as General Electric Company's RTV–602 silicone resin and devolatilizing the starting resin at a temperature of about 125 to 150° C. under a vacuum of at least 10^{-5} torr.

3,733,351

PRODUCTION OF 2-METHYLENE-GLUTARONITRILE

Yoshihisa Watanabe and Makoto Takeda, Inashiki-gun, Ibaraki-ken, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo-to, Japan

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,472
Claims priority, application Japan, Apr. 30, 1968, 43/28,989; Sept. 21, 1968, 43/68,513
Int. Cl. C07c *121/20, 121/30*
U.S. Cl. 260—465.8 D **7 Claims**

Catalytic dimerization of acrylonitrile is carried out with the use, as the catalyst, of a combination of one or more metal halogenides or metal halides, e.g., a metal chloride, and one or more trialkylamines. The metal halogenides are each representable by the general formula MeX*n* (where Me is zinc, aluminum, titanium, vanadium, iron, or cobalt, X is a halogen, and *n* is equal to the valence of the metal Me), and the trialkylamines are each representable by the general formula

(where R^1, R^2, and R^3 are respectively alkyl groups).

3,733,352

PREPARATION OF D-THREO-1-p-METHYLSULFONYLPHENYL - 2-DICHLORO-ACETAMIDOPROPANE-1,3-DIOL

Hisao Akiyama, Nishinomiya-shi, Hisao Tobiki, Toyonaki-shi, Toru Mitani, Nishinomiya-shi, Yasuharu Miura, Ikeda-shi, and Hiroyuki Suzuki, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed July 23, 1969, Ser. No. 844,206
Int. Cl. C07c *147/10*
U.S. Cl. 260—470 **5 Claims**

p-Methylsulfonylbenzaldehyde (2 moles) is reacted with an alkali metal salt of glycine (1 mole) in an alcohol in the presence of an alkali metal carbonate, and the thus obtained β-p-methylsulfonylphenylserine is reacted with an alcohol in the presence of an acid to give an ester of optically inactive threo-β-p-methylsulfonylphenylserine. This optically inactive ester is optically resolved with d-tartaric acid. D-form ester thereof is reduced by calcium chloride and sodium borohydride, and the thus obtained calcium salt of D-threo-1-p-methylsulfonylphenyl-2-amino-1,3-propane-dial boron complex is contacted with an alkali metal cyanide and chloral in water to obtain thiamphenicol. Further, the L-form threo ester obtained by the optical resolution can easily be racemized when hydrolyzed and then heated at 30°–150° C. at pH 8–11.

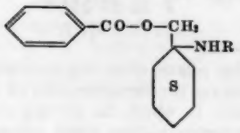
3,733,353

1-AMINOCYCLOHEXANEMETHYL BENZOATES

Julian R. Reasenberg, Brooklyn, and Rubin Drucker, Rosedale, N.Y., assignors to Mizzy Inc., New York, N.Y.

No Drawing. Application Apr. 22, 1970, Ser. No. 28,295, which is a continuation of application Ser. No. 848,394, July 23, 1969, which in turn is a continuation of application Ser. No. 379,375, June 30, 1964. Divided and this application Jan. 27, 1971, Ser. No. 110,303
Int. Cl. C07c *93/24*
U.S. Cl. 260—477 **5 Claims**

Compounds useful as local anesthetics having the formula:



wherein R is a member selected from the group consisting of hydrogen and alkyl wherein said alkyl is a member selected from the group consisting of straight and branched chain saturated aliphatic hydrocarbon groups.

3,733,354

PROCESS FOR THE PREPARATION OF CARBOXYLATED AROMATIC COMPOUNDS

Luigi Cassar and Marco Foa, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,624
Claims priority, application Italy, Oct. 20, 1969, 23,584/69
Int. Cl. C07c *63/00*
U.S. Cl. 260—515 R **8 Claims**

A process is disclosed for the preparation of carboxylated aromatic compounds by the reaction of simple or substituted aromatic chlorides, bromides and iodides, with carbon monoxide and a compound containing activated hydrogen selected from the class consisting of water, alcohols and amines, and in the presence of nickel-tetracarbonyl, wherein the reaction is carried out in an organic solvent medium having a high dielectric constant, in the presence of a basic compound, under substantially ambient pressure, and at a temperature between 20° and 130° C.

3,733,355

PRODUCTION OF NITRILOTRIACETIC ACID AND THE ANALOGS THEREFOR

Edward E. Harris, Niagara Falls, and James J. Hodan, Williamsville, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation of application Ser. No. 587,970, Oct. 20, 1966. This application July 28, 1970, Ser. No. 64,097
Int. Cl. C07c *101/20*
U.S. Cl. 260—534 E **11 Claims**

An improved process for the production of nitrilotriacetic acid is provided. In this process e.g., metal cyanide and formaldehyde are premixed for from about 0.1 to about 100 seconds, and this premixture is then reacted with ammonia. A substantial increase in the yield of the desired product is obtained via this process.

3,733,356

PROCESS FOR THE PREPARATION OF CIS-1-PROPENYLPHOSPHONIC ACID

Edward J. Glamkowski, Plainfield, Carlos B. Rosas, Rahway, Meyer Sletzinger, North Plainfield, and Joseph A. Wantuck, Woodbridge, N.J., assignors to Merck & Co., Rahway, N.J.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,864
Int. Cl. C07f *9/38, 9/42*
U.S. Cl. 260—543 P **3 Claims**

Cis-1-propenylphosphonic acid is prepared by reacting propargyl alcohol with an excess of phosphorus trichlo-

ride at elevated temperature to form 2-propynylphosphorodichloridite which is thermally rearranged to propadienylphosphonic dichloride. The latter compound is catalytically hydrogenated and then hydrolyzed to cis-1-propenylphosphonic acid, which is useful in preparing antibacterial materials.

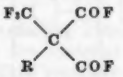
3,733,357

PERFLUOROMALONYL FLUORIDES

David Charles England, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,614
Int. Cl. C07c *55/08*
U.S. Cl. 260—544 F 7 Claims

Disclosed herein are compounds of the formula



wherein R is F or CF_3; and a process therefor comprising reacting carbonyl fluoride with a perfluoro compound selected from perfluoroacrylyl fluoride, perfluoromethacrylyl fluoride and perfluorodimethylketene, in the presence of an alkali metal fluoride catalyst; and their use as waterproofing agents.

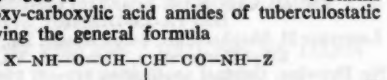
3,733,358

ALFA-AMINOOXY-CARBOXYLIC AMIDE DERIVATIVES

Lajos Kisfaludy, Agnes Patthy, nee Lukats, Lajos Dancsi, Gyorgy Fekete, and Istvan Szabo, Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyan Rt., Budapest, Hungary

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,228
Int. Cl. C07c *103/38, 103/30*
U.S. Cl. 260—558 A 4 Claims

α-Aminooxy-carboxylic acid amides of tuberculostatic activity, having the general formula



(I)

wherein

X represents hydrogen atom or an acyl group,

R represents hydrogen atom or an unsubstituted or substituted alkyl, aralkyl or aryl group,

Z represents an unsubstituted or substituted alkyl group of 1 to 15 carbon atoms, a cycloalkyl, aryl or aralkyl group, an unsubstituted or substituted aryl group or a heterocyclic radical

and their pharmaceutically acceptable acid addition salts.

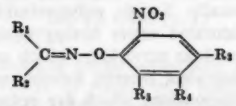
3,733,359

OXIME ETHERS AND PESTICIDAL PREPARATIONS CONTAINING THEM

Adolf Hubele, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 521,413, Jan. 18, 1966. This application June 16, 1970, Ser. No. 46,832
Claims priority, application Switzerland, Jan. 22, 1965, 915/65; July 9, 1965, 9,630/65
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AE 3 Claims

New oxime ethers and pesticidal and herbicidal preparations containing them are disclosed. The oxime ethers correspond to the formula



wherein R_1 is a hydrogen atom or a lower alkyl radical; R_2 is aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic radical; or wherein R_1 and R_2 form part of a saturated or unsaturated carbocycle or a 5-, 6- or 7-membered heterocycle; R_3 is a nitro, trifluoromethyl, formyl, lower carbalkoxy, sulfamyl or mono- or di-lower alkylsulfamy radical; R_4 and R_5 each is a hydrogen or halogen atom, an amino, mono- or di-lower alkylamino, lower alkoxy, cycloalkoxy, lower alkylthio, nitro, lower carbalkoxy, arylthio, lower aralkylthio group or 5-, 6- or 7-membered heterocycle.

3,733,360

PROCESS FOR PREPARING TETRAKIS (DIFLUORAMINO) METHANE

William Charles Firth, Jr., 192 Cheese Spring Road, Wilton, Conn. 06897, and Simon Frank, 34 Hazelwood Lane, Stamford, Conn. 06905

No Drawing. Original application May 9, 1963, Ser. No. 280,492. Divided and this application Oct. 22, 1965, Ser. No. 505,307
Int. Cl. C07c *87/22*
U.S. Cl. 260—583 NH 1 Claim

The invention is to a process for preparing tetrakis-(difluoramino)methane, useful as a fuel for rocket propulsion, which comprises reacting bis(difluoramino)fluoraminomethyl isocyanate with fluorine.

3,733,361

OXO PROCESS

John F. Deffner, Glenshaw, Edmond R. Fucci, Pittsburgh, and John V. Ward, Oakmont, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Aug. 23, 1966, Ser. No. 574,302
Int. Cl. C07c *45/08*
U.S. Cl. 260—604 F 8 Claims

An oxo process wherein an olefin is reacted with hydrogen and carbon monoxide in the presence of a cobalt carbonyl and a trioxaphosphineobicyclooctane, preferably in the presence of a trialkyl amine.

3,733,362

VAPOR PHASE CARBONYLATION

Giovanni Biale, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Mar. 19, 1968, Ser. No. 714,348
Int. Cl. C07c *45/08*
U.S. Cl. 260—604 HF 8 Claims

A gas phase carbonylation reaction is provided wherein a gas mixture of a low molecular weight olefin, carbon monoxide, and a coreactant such as an alcohol, amine, water or hydrogen is contacted in the vapor phase with a heterogeneous catalyst comprising a Group VIII metal and a biphyllic ligand which is supported in the reaction zone on a suitable inert solid support such as silica or alumina. In a typical application, propylene is hydroformylated to butyraldehyde by the contacting of a gas mixture of propylene, carbon monoxide and hydrogen with a tris (triphenylphosphine)rhodiumhydridecarbonyl catalyst impregnated on silica pellets. The reaction is performed at 400 p.s.i.g. and about 280° F. to produce an excellent yield of butyraldehyde having a high normal to iso ratio.

3,733,363

PROCESS FOR PREPARING A PHOSPHORYLATED ALPHA-OLEFIN POLYMER

Thomas J. Clough, Webster Grove, Mo., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Original application Apr. 11, 1967, Ser. No. 629,929, now Patent No. 3,650,953. Divided and this application Aug. 5, 1971, Ser. No. 169,527
Int. Cl. C07f *9/28*
U.S. Cl. 260—606.5 P 11 Claims

A phosphorus halide (e.g. PCl_3) is present during the Friedel-Crafts polymerization in a monochloroalkane solvent (e.g. ethylchloride) of an alpha-monoalkene, resulting in the in situ formation of a phosphorylated polymer. Further reaction of the polymer with a polymaine converts phosphoryl groups to phosphonamide groups, yielding a product which is useful as a lube oil detergent.

3,733,364
5-CHLORO-2-ETHYNYLBENZYL METHYL SULFOXIDE AND ITS PREPARATION
Joseph Albert Meschino, Doylestown, and James Nelson Plampin, Roslyn, Pa., assignors to McNeil Laboratories, Inc.
No Drawing. Filed Feb. 25, 1971, Ser. No. 118,977
Int. Cl. C07c *147/02*
U.S. Cl. 260—607 A **3 Claims**

Preparation of (i) 5-chloro-2-ethynylbenzyl methyl sulfoxide, useful for its muscle relaxant activity, by the reaction of methylsulfinyl carbanion with p-chlorobenzotrifluoride, and (ii) 2-methyl-sulfonylmethyl-4-chlorobenzoic acid by the oxidation of (i).

3,733,365
PROCESS FOR ORTHO-ALKYLATION
Ernest Leon Yeakey and Clarence Edward Keller, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
No Drawing. Filed May 5, 1969, Ser. No. 821,971
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 C **9 Claims**

Aromatic compounds such as hydroxyaromatics and aromatic amines are selectively ortho-alkylated with an olefin in the presence of a catalyst of a polymeric aluminum alcoholate, aluminum hydroxide condensed with an aluminum alcoholate, or active alumina activated with an aluminum alcoholate. The ortho-alkylated products of our invention are used industrially as antidegradants for materials subject to degradation caused by oxygen or ozone.

3,733,366
PREPARATION OF WHITE BROMINATED BIPHENYL
George A. Burk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,349
Int. Cl. C07c *25/18*
U.S. Cl. 260—649 D **7 Claims**

It has been found that discolored brominated biphenyl which is prepared by brominating biphenyl with bromine or bromine chloride in the presence of a Friedel-Crafts catalyst is decolorized by heating at a temperature between about 100° and the temperature at which the product discolors.

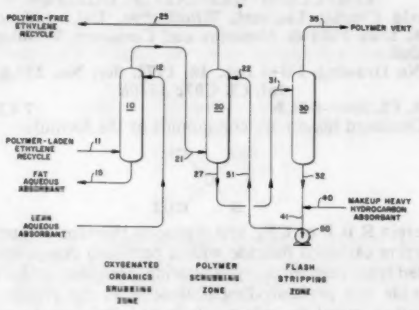
3,733,367
PROCESS FOR THE SEPARATION OF STYRENE FROM ETHYL BENZENE
Eli Perry, St. Louis, and William F. Strazik, St. Ann, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 8, 1972, Ser. No. 232,967
Int. Cl. C07c *7/02, 15/10*
U.S. Cl. 260—669 A **5 Claims**

Styrene is separated from organic mixtures comprising styrene and ethylbenzene by contacting the mixture against one side of a cyanoethyl cellulose membrane withdrawing at the other side a vaporous mixture having increased styrene concentration. The cyanoethyl cellulose employed preferably has a degree of substitution (D.S.) of from about 0.5 to 3.0.

3,733,368
PROCESS FOR THE SEPARATION OF POLYMERS FROM A RECYCLE STREAM THAT CONTAINS ETHYLENE
Delwin E. Dodd, San Ramon, Kuei-Jung Li, Oakland, and Robert A. Golding, San Rafael, Calif., assignors to Shell Oil Company, New York, N.Y.
Filed July 2, 1971, Ser. No. 159,326
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 A **10 Claims**

Contaminating quantities of C_4+ hydrocarbon polymers are removed from recycle ethylene in the process for catalytic hydration of ethylene by

(a) washing at least a portion of the total gaseous recycle stream with an aqueous absorbant in a first scrubbing zone to produce a polymer-rich ethylene overhead; and



(b) scrubbing the polymer-rich ethylene with a lean, heavy hydrocarbon absorbant in a second scrubbing zone to produce an ethylene overhead substantially free of polymers.

3,733,369
PRODUCTION OF 2-METHYL-6-ETHYL-HEPTA-2,6-DIENE
Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
No Drawing. Original application May 5, 1969, Ser. No. 822,046, now Patent No. 3,634,482. Divided and this application July 26, 1971, Ser. No. 164,852
Int. Cl. C07c *1/00, 11/12*
U.S. Cl. 260—680 R **2 Claims**

Nonionic organoaluminum compounds possessing an aluminacycloalkene moiety are prepared by causing interaction among aluminum, a conjugated diene (e.g., butadiene), an alkali metal aluminum tetrahydrocarbyl (e.g., sodium aluminum tetraethyl), and hydrogen, the reaction being conducted in the presence of a Lewis base (e.g., 1,4-dioxane) which is not excessively cleaved under the reaction conditions selected.

3,733,370
UNSATURATED ESTER GROUP TERMINATED POLYDIENES AS UNSATURATED POLYESTER MODIFIERS
Ronald E. Thompson, Park Forest, Ill., and Patrick W. Ryan, Glen Mills, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.
No Drawing. Filed May 6, 1971, Ser. No. 140,938
Int. Cl. C08f *43/02, 43/08, 29/12*
U.S. Cl. 260—862 **14 Claims**

Polyester resins of increased flexibility and strength are obtained by mixing usually liquid, unsaturated polyesters with certain, usually liquid, polymerizable polydiene ethylenically-unsaturated esters having terminal, allylic, acyloxy groups, such as acrylyloxy, which are terminally ethylenically-unsaturated, thereby forming usually liquid polymerizable compositions which are polymerizable to solid polymers. Commercial unsaturated polyester resins containing 0 to about 75% by weight of styrene can be used. From about 5 to 95% of the polymerizable polydiene ethylenically-unsaturated ester can be used in the

composition, although usually about 10 to 50% by weight is preferred.

3,733,371

IRIDESCENT COMPOSITION AND METHOD OF ITS PREPARATION

Akira Kose, Koganei, and Yoko Kobayashi, Fujisawa, Japan, assignors to Zaidan-Hojin Oyo Kogaku Kenkyujo, Tokyo, Japan

No Drawing. Filed Feb. 5, 1971, Ser. No. 113,039

Claims priority, application Japan, Mar. 31, 1970, 45/26,845

Int. Cl. C08f *19/08, 15/00, 19/00*

U.S. Cl. 260—880 R 10 Claims

A stabilized light reflecting iridescent polymeric material is provided. The new material comprises a three dimensional closely packed regularly arranged structure of uniform polymeric microspheres. The microspheres are obtained from a film forming polymeric latex and have a particle diameter in the range from 1,000 to 4,500 A. The polymeric structure is stabilized by surrounding the microspheres with a polymeric material having no measurable solubilizing effect on the microspheres and having a refractive index differing from that of the microspheres in absolute value to the extent of up to 0.1 to provide optical discontinuity.

3,733,372

IRIDESCENT MATERIAL AND METHOD MAKING THE SAME

Akira Kose, Koganei, and Yoko Kobayashi, Fujisawa, Japan, assignors to Zaidan-Hojin Oyo Kogaku Kenkyujo, Tokyo, Japan

No Drawing. Filed Feb. 5, 1971, Ser. No. 113,054

Int. Cl. C08f *19/02, 19/20*

U.S. Cl. 260—886 11 Claims

A stabilized light reflecting iridescent polymeric material is provided. The new material comprises a three dimensional, closely packed regularly arranged structure of uniform polymeric microspheres. The microspheres are obtained from a non-film-forming polymeric latex and have a particle diameter in the range from 1,500 to 4,500 A. The polymeric structure is semi-stabilized by sintering the particles by heat treatment in a liquid having no measurable solubilizing effect on the microspheres. The semi-stabilized polymeric structure is then completely stabilized by surrounding the microspheres with a polymeric material having no measurable solubilizing effect on the microspheres and having a refractive index differing from that of the microspheres in absolute value to the extent of up to 0.1 to provide optical discontinuity.

3,733,373

POLY-1-BUTENE RESINS

Richard L. McConnell and Doyle A. Weemes, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,518

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 A 12 Claims

Improved molding resins comprising a blend of (A) about 70 to 99.9% by weight of a substantially crystallizable polymer of 1-butene selected from homopolymers of 1-butene and copolymers of 1-butene and a dissimilar α-olefin of 2 to 12 carbon atoms, said α-olefin being present in said copolymer in a concentration of up to about 20% by weight and (B) about 0.1 to 30% by weight of a polymer of ethylene selected from homopolymer of ethylene and copolymer of ethylene and a higher α-olefin, said higher α-olefin being present in said copolymer in a concentration of up to about 10% by weight, said polymer of ethylene having a density of at least 0.93.

3,733,374

THIOPHOSPHATE ACETYL HYDRAZINES

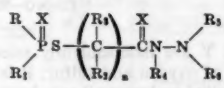
James Zielinski, Kenilworth, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,762

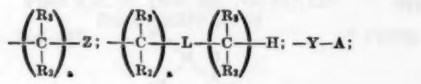
Int. Cl. C07f *9/16;* A01n *9/36*

U.S. Cl. 260—923 12 Claims

Organophosphorus compounds represented by the following structure:



wherein R and R_1 may or may not be the same and are selected from the group consisting of C_1–C_6 alkoxy or alkyl; C_1–C_6 alkoxyalkyl; phenoxy optionally substituted by halogen, nitro or C_1–C_6 alkyl; phenylthio optionally substituted by halogen, nitro or C_1–C_6 alkyl; C_1–C_6 alkylthio, branched and unbranched; phenyl optionally substituted by halogen, nitro or C_1–C_6 alkyl; R_2, R_3 and R_4 may or may not be the same and are selected from the group consisting of hydrogen; C_1–C_6 alkyl, unsubstituted, branched or unbranched or optionally substituted by halogen, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylthioalkyl, C_1–C_6 alkoxy alkyl or mono and dialkylaminoalkyl; phenyl optionally substituted by halogen, nitro or C_1–C_6 alkyl; X is either O or S and *n* is an integer ranging from 1–3; R_5 and R_6 may be the same or different and are selected from the group consisting of



substituted or unsubstituted aryl and heteroaryl; wherein Z=CN, $COOR_2$, $CON(R_2)_2$, NO_2, $SO_2N(R_2)_2$, COOH, trihaloalkyl,

wherein L=O, S, SO, SO_2, NH, NR_2,

SO, SO_2, A=OR_2, SR_2, NHR_2, $N(R_2)_2$ and *a* is an integer ranging from 1 to 6; with the proviso that when R_5 is the same as R_2, then R_6 cannot be R_2 except when R_5 or R_6 is aryl or heteroaryl.

3,733,375
OXIME CARBAMATE PHOSPHATE, PHOSPHONATE, PHOSPHINATE AND PHOSPHOROAMIDATES

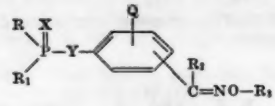
Arnold D. Gutman, Pinole, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 730,588, May 20, 1968, which is a continuation-in-part of application Ser. No. 646,467, June 16, 1967. This application July 9, 1970, Ser. No. 53,703

Int. Cl. C07f *9/12, 9/18;* **A01n** *9/36*

U.S. Cl. 260—938 **44 Claims**

Oxime carbamate phosphates, phosphonates, phosphinates and phosphoroamidates having the general formula:



in which X and Y are independently selected from the group consisting of oxygen and sulfur; R is selected from the group lower alkyl or lower alkoxy, having from 1 to 6 carbon atoms inclusive; R_1 is selected from the group consisting of lower alkyl or lower alkoxy having from 1 to 6 carbon atoms, inclusive, amino, lower alkyl-substituted amino and phenyl; Q is selected from the group consisting of divalent tetramethylenediene-1,3, lower alkoxy or lower alkyl having from 1 to 4 carbon atoms inclusive, each, nitro, halogen and combinations thereof, and lower dialkyl substituted thionophosphoryloxy; R_2 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 4 carbon atoms, and phenyl; and R_3 is selected from the group consisting of hydrogen; substituted carbonate and thiocarbonates of the type

in which Z is oxygen or sulfur, R_4 is lower alkyl having from 1 to 4 carbon atoms, inclusive, and β-chloro-lower-alkyl having from 2 to 4 carbon atoms; carbamates of the type

in which R_5 and R_6 are independently selected from the group consisting of hydrogen, alkyl having from 1 to 10 carbons, inclusive, substituted alkyl having 1 to 6 carbon atoms inclusive, said substituents selected from the group consisting of hydroxy, halogen, amino, di-lower-alkyl amino, lower alkoxy, and tetrahydrofuryl; lower alkenyl having from 2 to 4 carbons, inclusive, carboalkoxy alkyl having a total of from 3 to 8 carbon atoms, inclusive, cycloalkyl having from 3 to 6 carbon atoms, inclusive, piperazino, 2-thiazolyl, phenyl, naphthyl, substituted phenyl wherein said substituents are selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino in which said lower alkyl and lower alkoxy moieties have from 1 to 4 carbon atoms, inclusive, nitro, cyano, trifluoromethyl, and combinations thereof; and in which

is an N-containing heterocyclic member selected from the group consisting of morpholino, piperazino, pyrrolidino, piperadino, hexamethylenamino, pyrryl, indolyl, imidazolyl, benzimidazolyl, pyrazolyl, 1,3-oxazolidino, and 1,3-thiazolidino; esters of the type

wherein R_7 is selected from the group consisting of alkyl having from 1 to 8 carbons inclusive, trichloromethyl and lower alkenyl having from 2 to 4 carbon atoms, inclusive, and the radical $—(CH_2)_m—SR$ in which m is 1 or 2, R is alkyl having 1 to 6 carbon atoms, alkenyl having 2 to 4 carbon atoms, phenyl, substituted phenyl in which said substituents are selected from the group halogen, lower alkyl having 1 to 4 carbon atoms, inclusive, and lower alkoxy having 1 to 4 carbon atoms, inclusive; lower alkyl sulfonato having from 1 to 6 carbon atoms, inclusive; lower alkyl substituted thiophosphoryl wherein the lower alkyl groups independently contain from 1 to 4 carbon atoms, inclusive, and 2,2,2-trichloro-1-hydroxyethyl-4-cyanophenyl, 2,4,5 - trichlorophenyl and 4 - methylthiophenyl.

3,733,376
PHOSPHORIC ACID ESTERS

Odd Kristiansen, Reinach, Basel-Land, and Kurt Gubler, Riehen, Basel-Stadt, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

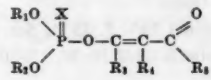
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,893

Claims priority, application Switzerland, Sept. 10, 1969, 13,751/69

Int. Cl. A01n *9/36;* **C07f** *9/08*

U.S. Cl. 260—941 **7 Claims**

Phosphoric acid esters of the formula



wherein

X represents oxygen or sulphur,

R_1 and R_2 each independently represent a lower alkyl radical,

R_3 represents hydrogen, an alkoxycarbonyl or halogeno-methyl radical,

R_4 represents a lower alkoxy, alkylthio or dialkylamino radical and

R_5 represents a lower alkoxy radical, or

R_4 represents a lower alkylthio radical and

R_5 represents a dialkylamino radical,

are disclosed. Pesticidal compositions and a method for controlling pests are further disclosed.

3,733,377
METHYLACETYLENE DIADDUCTS OF DIALKYL DITHIOPHOSPHORIC ACIDS

Alexis A. Oswald, Mountainside, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 518,028, Jan. 3, 1966. This application Mar. 15, 1971, Ser. No. 124,564

Int. Cl. A01n *9/36;* **C07f** *9/16;* **C10m** *1/48*

U.S. Cl. 260—948 **5 Claims**

Methylacetylene diadducts of dialkyl dithiophosphoric acids are prepared via selective free radical and electrophilic reactions. The free radical reactions can be carried out to yield the corresponding vinylic dithiophosphate monoadducts. These in turn are reacted with thiols to yield sequential diadducts. Some of the novel sequential diadduct dithiophosphate esters are unexpectedly suitable for animal insecticide applications, due to the detoxifying effect of their β-alkyl substituents on the hydrocarbylthioethyl moiety.

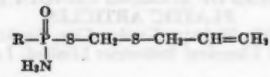
3,733,378

AMIDO-O-LOWER ALKYL-S-ALLYLMERCAPTO-METHYLTHIOLPHOSPHORIC ACID ESTERS

Gerhard Schrader, Wuppertal-Cronenberg, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,533
Claims priority, application Germany, Dec. 24, 1969, P 19 64 835.2
Int. Cl. A01n 9/36; C07f 9/24
U.S. Cl. 260—948 4 Claims

Amidothiolphosphoric acid esters, i.e. amido-O-lower alkyl-S-allylmercaptomethylthiolphosphoric acid esters of the general formula



(I)

in which

R denotes an alkoxy radical having 1 to 4 carbon atoms, which possess insecticidal and acaricidal properties.

3,733,379

ALKOXYALKYL PHOSPHONATES

Karoly Szabo, Syracuse, N.Y., assignor to Esso Research and Engineering Company

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,773
Int. Cl. A01n 9/36; C07f 9/40
U.S. Cl. 260—950 5 Claims

Organophosphorus compounds, characterized by the following structural formula:

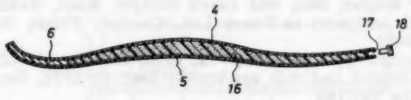
wherein Z is a C_1 to C_6 alkyl—O—CH_2 group; X is either O or S; R_1 is a C_1 to C_6 alkyl group; R_2 is one selected from the group consisting of C_1 to C_{20} aliphatic, C_6 to C_{10} aromatic and heretocyclic moiety containing 3 to 8 carbon atoms, have been shown to possess insecticidal properties.

3,733,380

PRODUCTION PROCESS FOR A CORE BODY OF SKI

Yoshikatsu Ishida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Mar. 10, 1971, Ser. No. 122,727
Claims priority, application Japan, Mar. 18, 1970, 45/22,480; Dec. 30, 1970, 46/123,007
Int. Cl. B29d 27/00
U.S. Cl. 264—45 12 Claims



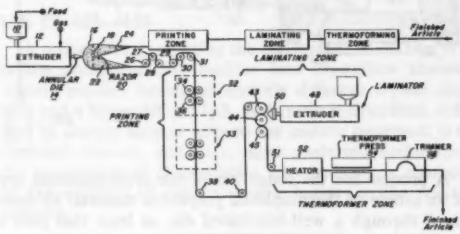
A process for producing a core body of ski comprising the steps of preparing a combined mold consisting of an upper mold and a lower mold and forming a molding cavity therebetween in such a manner that the vertical measurement of the cavity conforms to the thickness distribution of the desired core body of ski, disposing the combined mold obliquely so that an end thereof is located at a lowermost position, providing an opening in one part of the upper mold extending from the center to the upper end of the obliquely disposed mold, pouring a hard type foamable resin into the molding cavity, closing the opening, foaming and solidifying the resin thus poured inside of the molding cavity, and taking out the core body thus formed inside of the molding cavity.

3,733,381

CONTINUOUS PROCESS FOR MAKING THERMOFORMED ARTICLES OF MANUFACTURE

Edward D. Willette, Winnetka, Ill., and Conrad F. Mazur, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 31, 1970, Ser. No. 103,019
Int. Cl. B29d 27/00
U.S. Cl. 264—47 1 Claim



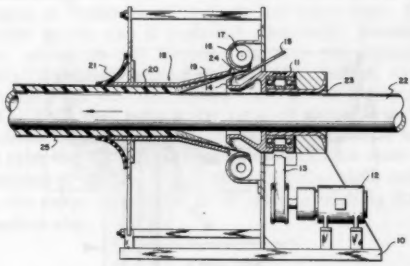
Polymeric material, with gas injection, is continuously extruded to form a continuous web of foam. The web is then directly laminated and the article of manufacture is directly thermoformed from the laminated web. Optionally, the web surface can be printed upon before lamination. This provides an article having a cellular-structure polymeric substrate having an imprinted surface protected by a laminar-like coating.

3,733,382

METHOD OF CENTRIFUGALLY APPLYING FOAM INSULATION TO A PIPE

Jan C. van Dijk, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,129
Int. Cl. B29d 27/04
U.S. Cl. 264—47 7 Claims



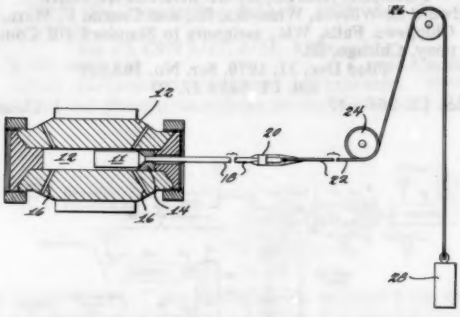
A method for continuously producing tubular foamed polyurethane insulation in which a liquid foamable polyurethane composition is supplied to a rotary ring dispenser which centrifugally sprays the liquid onto a flexible sleeve positioned around and spaced from a pipe. The sleeve and dispensed liquid are moved axially relative to the dispenser and the outer surface of the sleeve is supported while the liquid foams and expands radially to fill the space between the pipe and the sleeve.

3,733,383

DEFORMATION OF POLYMERIC MATERIALS

John Brian Bunney and Christopher Cassin, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 9, 1970, Ser. No. 53,585
Int. Cl. B29c 23/00, 17/00
U.S. Cl. 264—88 14 Claims



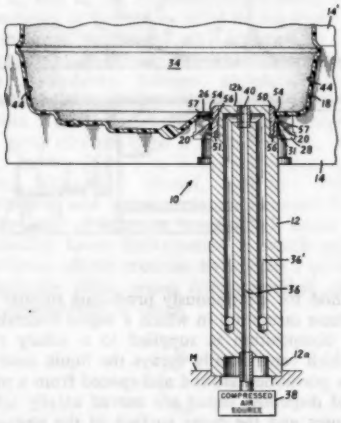
A process for the reduction of the cross-sectional area of an article of thermoplastic polymeric material by drawing it through a well-lubricated die, at least that part of the article to which the draw-stress is applied being prestrengthened by molecular orientation. A preferred form of the process involves applying a substantial draw-stress to the extrudate from a hydrostatic extrusion process. Extruded and/or drawn articles of thermoplastic polymers may be produced having a hitherto, unattainable degree of molecular orientation, and, hence, physical properties, e.g., modulus. It is also possible to overcome the excessive relaxation of the product hitherto associated with the application of hydrostatic extrusion to such materials.

3,733,384

PROCESS FOR PREVENTING FLUID LEAKAGE IN EXTRUSION BLOW MOLDING

Albert F. Gerlovich, Fanwood, and George H. Dunbeker, Old Bridge, N.J., assignors to Rheem Manufacturing Company, New York, N.Y.

Continuation of abandoned application Ser. No. 866,665, Oct. 15, 1969. This application Jan. 19, 1972, Ser. No. 219,170
Int. Cl. B29c 17/07
U.S. Cl. 264—98 1 Claim



A blow pin on the one hand and outer partible mold sections on the other are complementally shaped substantially to engage each other along a circular cutting edge when the mold sections are closed about the blow pin. The portion of the blow pin that engages the outer partible mold sections is provided with a removable sleeve formed with a pair of annular grooves extending circumferentially of the blow pin. The sleeve cooperates with removable inserts in the outer mold sections. A container is fabricated the neck of which is fully formed by the initial cooperation between the blow pin and mold sections and the remainder of which is formed by a subsequent blowing operation.

3,733,385

METHOD OF MAKING CONDUCTING PLASTIC ARTICLES

Wilson Reddish, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,581
Claims priority, application Great Britain, Dec. 4, 1967, 55,063/67
Int. Cl. B01f 3/18
U.S. Cl. 264—105 7 Claims

A method for making conducting articles from thermoplastics materials containing no more than 2% by weight of a conducting filler comprises rotationally moulding a dry mixture of powdered thermoplastic with from 0.1 to 2% by weight of a powdered conducting filler such as carbon black and in particular furnace black. Also conducting articles made from a thermoplastic material such as low density polythene containing no more than 2% by weight of a conducting filler and having a volume resistivity of less than 1×10^8 ohms.

3,733,386

PROCESS FOR PRODUCING ACRYLIC SYNTHETIC FIBERS IMPROVED IN THE HYDROPHILICITY

Keitaro Shimoda, Takehiko Sumi, and Yoshiharu Mochida, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,709
Int. Cl. D01f 7/00
U.S. Cl. 264—182 9 Claims

A process for making acrylic fibers more hydrophilic by wet-spinning an acrylonitrile polymer solution to form a wet-gel fiber, stretching the wet-gel fiber, crosslinking the wet-gel fiber, hydrolyzing the crosslinked wet-gel fiber, optionally treating the hydrolyzed crosslinked wet-gel fiber with an aqueous solution of an ammonium or metal salt to improve anti-static properties, and thereafter drying the fiber.

3,733,387

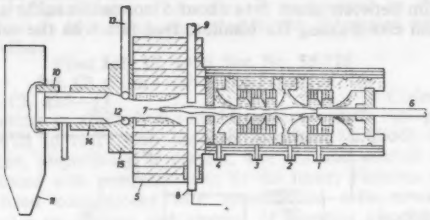
PREPARATION OF FINELY PARTICULATE SILICON DIOXIDE

Tibor Kugler, Sins, and Jakob Silbiger, Basel, Switzerland, assignors to Lonza Ltd., Gampel, Valais, Switzerland

Original application Mar. 12, 1970, Ser. No. 18,902. Divided and this application Dec. 6, 1971, Ser. No. 205,166
Claims priority, application Switzerland, Mar. 31, 1969, 4,826/69
Int. Cl. C01b 33/18, 33/00
U.S. Cl. 423—33 C 6 Claims

Finely particulate silicon oxides are produced from coarse particulate silicon dioxide using a liquid stabilised plasma burner. Hydrocarbons are used as the stabilising liquid, and the coarse particulate silicon dioxide is reduced by the hydrocarbon plasma jet leaving the plasma burner, and a part of the hydrocarbon which is evaporated and decomposed in the arc zone is withdrawn together with the liquid hydrocarbon stabilising medium, which is recycled, separated from the liquid, and used as carrier gas

for feeding the coarse particulate silicon dioxide. Finely particulate silicon monoxide is initially formed, and may



be recovered as such, or oxidised at the anode of the plasma burner to silicon dioxide.

3,733,388

PURIFICATION PROCESS FOR SOLUTIONS CONTAINING RHENIUM

Max Ziegler, Hohe Linde, Germany, assignor to W. C. Heraeus G.m.b.H., Hanau (Main), Germany

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,951

Claims priority, application Germany, May 2, 1970, P 20 21 631.3

Int. Cl. C01g *47/00*

U.S. Cl. 423—49 **2 Claims**

Metal impurities are quantitatively removed from aqueous rhenium solution or an ammonium perrhenate solution with an ion exchange material comprising a support to which is bound polyethyleneimine as the active exchange material.

3,733,389

METHOD FOR THE MANUFACTURE OF ALKALI CHROMATE FROM A CHROME ORE

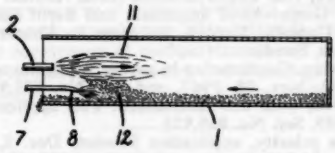
Keizo Honbo, Anan, Japan, assignor to Nippon Denko Kabushiki Kaisha, Tokyo, Japan

Filed July 14, 1971, Ser. No. 162,436

Claims priority, application Japan, Aug. 31, 1970, 45/75,905

Int. Cl. C01g *37/14*

U.S. Cl. 423—53 **2 Claims**



A method for manufacturing alkali chromate in a rotary kiln by roasting the material which includes chrome ore, caustic alkali, alkali carbonate and slaked lime, etc. In a process for roasting the said material wherein the said material is passed through a horizontally inclined rotary kiln from its raised end, while passing into the low end the improvement comprises blowing an oxygen containing gas against the said material in the direction opposite to the flow of the said material in the oxidizing zone of the kiln so as to scatter a part of the said material coming down thereto, resulting in the promotion of the oxidizing roasting, etc.

3,733,390

PROMOTION OF CRYSTALLINE ZEOLITE SYNTHESIS

Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 104,745, Jan. 7, 1971. This application July 1, 1971, Ser. No. 159,053

Int. Cl. C01b *33/28*

U.S. Cl. 423—118 **13 Claims**

A process for promoting the conversion of certain crystalline aluminosilicate zeolites into crystalline aluminosilicate zeolites having an entirely different crystal structure and a lower SiO_2/Al_2O_3 mole ratio is described. Addition of certain soluble salts to the caustic treatment is the essential feature, and in a most preferred embodiment the conversion of clinoptilolite into faujasite is promoted by the addition of certain soluble halides to the reaction mixture.

3,733,391

PROCESS OF PREPARING HIGH SILICA FAUJASITE

George W. Hoffman, Houston, Tex., asisgnor to NL Industries, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 784,230, Dec. 16, 1968. This application Nov. 1, 1971, Ser. No. 194,489

Int. Cl. C01b *33/28*

U.S. Cl. 423—118 **12 Claims**

Synthetic faujasite having a SiO_2/Al_2O_3 mol ratio of at least 3.5 is produced by acid leaching calcined kaolin clay to a SiO_2/Al_2O_3 mol ratio within the range of about 4 to 10, washing the acid leached clay until substantially free of acid, commingling the clay with sodium hydroxide and water in specified mole ratios of Na_2O, Al_2O_3, SiO_2, and H_2O, optionally aging the reaction mixture at a temperature in the range of about 20° C. to 35° C., and thereafter heating the reaction mixture to a temperature in the range of about 95° C. to 105° C. until the desired degree of formation of faujasite has taken place. Delaminated kaolin clay is preferred. Optionally, fluoride ions are added to the reaction mixture to increase the SiO_2/Al_2O_3 mol ratio of the faujasite product. Also, optionally, the calcined kaolin clay is acid leached to a SiO_2/Al_2O_3 mol ratio in the range of about 10 to 50 and sodium hydroxide added to the clay-acid leach mixture to raise the pH thereof so as to reprecipitate some of the alumina to produce a clay having a SiO_2/Al_2O_3 mol ratio in the range of about 4 to 10 prior to washing the acid-leached clay.

3,733,392

OXYCHLORINE TRIFLUORIDE AND ALKALI FLUORIDE-Cl_2O COMPLEX

Donald Pilipovich and Richard D. Wilson, Canoga Park, and H. Fred Bauer, Thousand Oaks, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Apr. 13, 1966, Ser. No. 543,493

Int. Cl. C01b *11/02;* **C01d** *3/02*

U.S. Cl. 423—179 R **4 Claims**

The new compounds, $OClF_3$ and $MF.Cl_2O$ where M is an alkali metal, are prepared by reacting Cl_2O with an

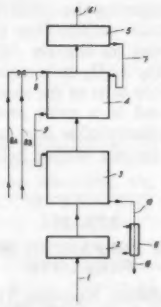
alkali metalfluoride to form $MF.Cl_2O$ and then fluorinating to form $OClF_3$, which is useful as an oxidizer in rocket engines.

3,733,393

PURIFICATION OF COMBUSTION PRODUCTS BEFORE DISCHARGE INTO THE ATMOSPHERE

Jean-Pierre Couillaud, Antony, and Jean Louise, Villejuif, France, assignors to l'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Sept. 30, 1971, Ser. No. 185,113
Claims priority, application France, Sept. 30, 1970, 7035347; Aug. 17, 1971, 7129931
Int. Cl. B01d *47/00*
U.S. Cl. 423—215 **5 Claims**



The invention relates to a process for purifying combustion fumes and other residual gases before being discharged into the atmosphere. The process comprises at least two stages, consisting in a first dust-extraction phase and then a second chemical purification phase of the fumes, in which is achieved an intimate contact of the said smokes with a solution containing hydrogen peroxide.

3,733,394

PROCESS FOR MAKING CHAOITE

Arthur G. Whittaker, Woodland Hills, Calif., assignor to The Aerospace Corporation, Los Angeles, Calif.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,705
Int. Cl. C01b *31/02*
U.S. Cl. 423—460 **4 Claims**

An allotropic form of carbon, "chaoite," having a white appearance, a hardness greater than 9 on the Moh scale, a density in excess of 3.33 g./c c., is produced on the surface of graphite heated to above 2550° K. in an inert atmosphere.

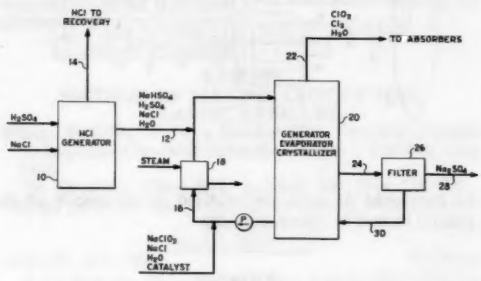
3,733,395

PROCESS FOR PRODUCING CHLORINE DIOXIDE, CHLORINE AND A NEUTRAL SULFATE SALT IN THE SULFATE OR KRAFT PROCESS OF PREPARING WOOD PULP

Willard A. Fuller, Grand Island, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 7, 1971, Ser. No. 132,037
Int. Cl. C01b *11/02*; C01d *7/02, 5/02*
U.S. Cl. 423—478 **10 Claims**

A continuous process is provided for the production of chlorine dioxide, chlorine and a neutral sulfate salt which comprises feeding a chlorate, a reducing agent, a bisulfate and sulfuric acid to a chlorine dioxide generator to form an aqueous reaction solution which is maintained at a temperature of from about 50 to about 100 degrees centigrade, at a pressure from about 50 millimeters mercury absolute to about atmospheric pressure, while maintaining the concentration of said chlorate from about 0.2 to about 2.5 moles per liter; maintaining the concentration of said reducing agent from about 0.2 to about 2.5 moles per liter; maintaining the acidity of said reaction solution between about 2 to about 6 normal in sulfuric acid and coordinating the bisulfate feed rate with the sulfuric



acid feed rate to provide an acid hydrogen radical to sulfate radical ratio from about 1.05–1.95. The bisulfate feed material as well as a portion of the reducing agent, in the form of an alkali metal chloride, is advantageously supplied from the by-product of the reaction of sodium chloride with concentrated sulfuric acid to produce hydrochloric acid.

3,733,396

PREPARATION OF ALKALI METAL HEXAFLUOROCHLORATES

John P. Faust, Hamden, Albert W. Jache, North Haven, and Andrew J. Klanica, Cheshire, Conn., assignors to Olin Mathieson Chemical Corporation

No Drawing. Filed Aug. 20, 1965, Ser. No. 482,330
Int. Cl. C01c *7/24*; C01d *11/00*
U.S. Cl. 423—466 **2 Claims**

1. Process for preparing alkali metal hexafluorochlorates having the formula $MClF_6$ where M is potassium, rubidium or cesium which comprises reacting MF with chlorine pentafluoride in a reaction zone defined by surfaces of polymeric tetrafluoroethylene at about 0° to 150° C. and at autogenous pressure.

3,733,397

METHOD FOR THE X-RAY VISUALIZATION OF BODY CAVITIES AND A PREPARATION FOR CARRYING OUT THE METHOD

Lars Björk, Uno Eugen Erikson, Kirsti Annikki Granath, Björn Gustav-Adolf Ingelman, and Bernt Jabes Lindberg, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

No Drawing. Continuation-in-part of applications Ser. No. 686,340, Nov. 28, 1967, and Ser. No. 775,920, Nov. 14, 1968, both now abandoned. This application Oct. 27, 1969, Ser. No. 869,926
Claims priority, application Sweden, Dec. 2, 1966, 16,513/66; Nov. 16, 1967, 15,725/67
Int. Cl. A61k *27/08*
U.S. Cl. 424—5 **23 Claims**

Method for the X-ray visualization of body cavities which comprises administering to the body of the test object a preparation which contains a member selected from the group of polymers being built up of alternating 2,4,6-triiodobenzoic acid derivative groups and intermediate aliphatic hydroxyl group-containing bridges, and physiological acceptable salts thereof; and the preparations suitable for carrying out the method.

3,733,398

DETERMINING AND REVERSING ANTICOMPLEMENTARY ACTIVITY IN COMPLEMENT FIXATION TEST FOR AUSTRALIA ANTIGEN

Nahum Raphael Shulman, Kensington, Md., assignor to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

Filed July 17, 1970, Ser. No. 55,725
Int. Cl. C12k *1/00*; G01n *31/00, 33/16*
U.S. Cl. 424—12 4 Claims

Antigen or antibody is added to an appropriate biologic material to react wtih hepatitis associated antibody or antigen, respectively, if present. The reaction mixture is incubated with complement to fix the latter. Titration of non-fixed complement with standardized cells reveals presence or absence and amount of hepatitis associated antibodies or antigens in the substance tested, thereby revealing the presence of disease or immunity to the disease if substances from an individual are tested, or the presence of virus than can transmit disease or antibody that may neutralize virus in biological materials that are tested. In such test procedure, anticomplementary activity may be detected. It can be reversed by adding to the anticomplementary biologic material a large excess of the antigen or the antibody.

3,733,399

ORAL COMPOSITIONS CONTAINING AN ENZYME

Joseph Gerald Becker, Martinsville, Robert Lee Mitchell, Somerset, and William Grant Pierson, Irvington, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 23,467, Mar. 27, 1970, which is a continuation-in-part of application Ser. No. 864,212, Oct. 6, 1969, now abandoned. This application Jan. 14, 1972, Ser. No. 217,940
Int. Cl. A61k *7/16*
U.S. Cl. 424—50 13 Claims

Toothpaste compositions which contain as the active ingredient, the enzyme invertase.

3,733,400

DIGESTIVE TRACT PROTECTING COMPOSITIONS

André Queuille, Noisy le Sec, and Robert Fournex, Paris, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Jan. 26, 1971, Ser. No. 109,989
Claims priority, application France, Feb. 5, 1970, 7004075
Int. Cl. A61k *27/00*
U.S. Cl. 424—81 4 Claims

Digestive tract protecting compositions containing as the active ingredient at least one polymer selected from the group consisting of homopolymers of acrylamide and methacrylamide, copolymers of acrylamide and acrylic acid and copolymers of methacrylamide and methacrylic acid and to methods of treating or preventing ulcers or inflammation of large intestine in warm-blooded animals.

3,733,401

HIGHLY ATTENUATED NEWCASTLE DISEASE VIRUS VACCINE AND PRODUCTION THEREOF

Homu Ito, Suita, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,875
Int. Cl. C12k *7/00*
U.S. Cl. 424—89 5 Claims

Highly attenuated Newcastle disease virus vaccine is provided, as well as method for production thereof by (1) either subjecting Newcastle disease virus (NDV) to at least 20 serial passages of cultivation in a porcine tissue culture, or cultivating the virus in porcine stable cell lines for at least 2 months, (2) inoculating the resultant porcine cells containing attenuated NDV onto a chorioallantoic membrane of a chick embryo and cultivating the inoculated chick embryo, and (3) subjecting the NDV recovered from the resultant complex of the chorioallantoic membrane and porcine cells to at least 2 serial passages of cultivation in the allantoic cavity of a chick embryo.

3,733,402

AMNIOTIC LIQUID FOR CONDITIONING THE HAIR

Gregoire Kalopissis and Georges Manoussos, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 475,876, July 29, 1965. This application June 11, 1970, Ser. No. 45,584
Int. Cl. H61k *7/06*
U.S. Cl. 424—70 2 Claims

A hair conditioning composition comprising a lyophilized sterile amniotic liquid free of natural amniotic solids that has been taken from bovines that have been pregnant for more than 60 days and less than 90 days.

3,733,403

GELLED MINERAL OIL

James Ling Chen, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,931
Int. Cl. A61k *9/06*; C10m *5/26, 5/10*
U.S. Cl. 424—83 7 Claims

Mineral oil gelled with a gellant selected from polyethylene and polymethylpentene and contains 0.1–5% by weight of powdered porous magnesium silicate as an antisyneresis agent.

3,733,404

ANTIBACTERIAL COMPOSITION CONTAINING α-AMINOBENZYL PENICILLINS

Gilman N. Cyr, Piscataway, Charles Riffkin, Highland Park, and Carl B. Rifino, Lakewood, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,967
Int. Cl. A61k *21/00*
U.S. Cl. 424—114 5 Claims

Antibacterial compositions are provided comprising a mixture of ampicillin trihydrate and sodium ampicillin which is absorbed at a faster rate than ampicillin trihydrate alone and which does not have disadvantages associated with the use of sodium ampicillin alone. Further, antibacterial compositions are provided comprising a mixture of ampicillin and sodium ampicillin which does not have disadvantages associated with the use of sodium ampicillin alone.

3,733,405

STABILIZER FOR ETHYLENE DIAMINE DIHYDRIODIDE

Donald J. Derrig, Watkins Glen, N.Y., assignor to Watkins Salt Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 753,740, Aug. 19, 1968. This application May 10, 1971, Ser. No. 142,005
Int. Cl. A01k *27/00*
U.S. Cl. 424—171 13 Claims

This invention relates to a method of stabilizing ethylene diamine dihydriodide (EDDI) so as to prevent the release of iodide or iodine, particularly in the presence of moisture. This stabilized product may be used by itself or blended with various animal feeds so as to provide medicaments and nutrients therein. The stabilizer is selected from the group consisting of hemicellulose extract, lignosulfonate, caramel, wood sugar and molasses.

3,733,406

USE OF N-α-DIALKOXYPHOSPHINOTHIOACETYL-N-METHYLCARBAMATES OF PHENOLS AS INSECTICIDES AND ACARICIDES

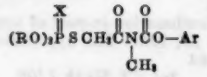
Albert H. Haubein, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Division of application Ser. No. 743,322, July 9, 1968, now Patent No. 3,600,471, which is a continuation-in-part of applications Ser. No. 567,064, July 22, 1966, and Ser. No. 646,486, June 16, 1967, both now abandoned. This application July 31, 1970, Ser. No. 64,931

Int. Cl. A01n *9/36*

U.S. Cl. 424—211 5 Claims

Disclosed is the use of insecticides and acaricides of compounds of the formula:



in which X is O or S, R is CH_3 or C_2H_5, and Ar is phenyl or substituted phenyl.

3,733,407

MENOPAUSE TREATMENT

Eugene J. Segre, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,934

Int. Cl. A61k *17/00*

U.S. Cl. 424—239 14 Claims

A method for relieving or preventing menopausal symptoms by use of a graded sequential estrogen-progestogen regimen.

3,733,408

FLOCCULATED PHARMACEUTICAL SUSPENSIONS

Gunther Storz, Ridgewood, N.Y., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 41,566, May 28, 1970. This application Jan. 12, 1972, Ser. No. 217,298

Int. Cl. A61k *9/00*

U.S. Cl. 424—243 9 Claims

Disclosed herein are stable flocculated suspensions of medicaments prepared by combining an aqueous vehicle containing a non-ionic surfactant of the polyether type, and having the medicament dispersed therein, and an aqueous vehicle containing a mixture of benzyl alcohol and parabens, both in their usual preservative amounts.

3,733,409

METHOD OF TREATING HYPERTENSION USING THIENO [1,2,4] THIADIAZINES

John G. Topliss, West Caldwell, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Original application May 20, 1969, Ser. No. 826,293, now Patent No. 3,641,017, dated Feb. 8, 1972. Divided and this application May 10, 1971, Ser. No. 141,969

Int. Cl. A61b *27/00*

U.S. Cl. 424—246 7 Claims

This invention relates to novel substituted thieno [1,2,4] thiadiazine-1,1-dioxides, to methods for preparing and to methods for using the same as anti-hypertensive agents.

3,733,410

ELIXIRS WITH ACID ADDITION SALTS OF THERAPEUTICALLY ACTIVE ORGANIC BASES AS ACTIVE SUBSTANCES

Henning Asche, Riehen, Basel, Switzerland, assignor to Ciba-Geigy A.G., Basel, Switzerland

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,059

Claims priority, application Switzerland, Jan. 29, 1969, 1,335/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—232 11 Claims

Elixirs containing the monosodium pamoate of a therapeutically active organic base and other pharmaceutically acceptable additives have improved properties.

3,733,411

ANTIINFLAMMATORY METHODS

William Rodney Roderick, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed June 9, 1971, Ser. No. 151,483

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 3 Claims

2,3 - dihydro - 1H - pyridino-[2,3-b][1,4]-thiazin-2-one 4-oxide has been found to possess excellent antiinflammatory, analgesic and antipyretic activity when administered in small doses to warm-blooded animals.

3,733,412

SPIRO-AZATETRAMETHYLENE DERIVATIVES AS ANTIINFLUENZA AGENTS

Cornelis Albertus de Bock and Joseph Lucas Maria Antonius Schlatmann, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Original application July 3, 1968, Ser. No. 742,130, now Patent No. 3,595,876, dated July 27, 1971. Divided and this application Feb. 24, 1971, Ser. No. 118,553

Int. Cl. H61k *27/00*

U.S. Cl. 424—274 7 Claims

Antiinfluenza compositions containing spiro-azatetramethylene derivatives.

3,733,413

BACTERICIDAL ACTIVITY OF DIKETENE VAPOR

David R. Spiner and Robert K. Hoffman, Frederick, Md., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 29, 1967, Ser. No. 694,365

Int. Cl. A01n *9/28*

U.S. Cl. 424—278 9 Claims

Killing bacterial spores and bacterial vegetative cells at room temperature with varying degrees of relative humidities by diketene vapor.

3,733,414

METHOD FOR THE CONTROL OF ACARIDS USING 3-HALOBENZAMIDES

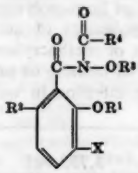
Sidney B. Richter and Eugene F. Barnas, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Original application Oct. 8, 1968, Ser. No. 765,962, now Patent No. 3,649,664, dated Mar. 14, 1972. Divided and this application May 28, 1971, Ser. No. 148,198

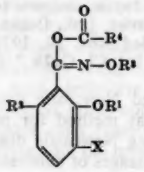
Int. Cl. A01n *9/00, 9/20*

U.S. Cl. 424—300 6 Claims

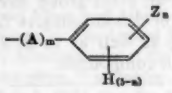
This invention discloses chemical compounds selected from the group consisting of



and their isomeric form



wherein X is halogen; R^1 and R^3 are alkyl; R^2 is selected from the group consisting of alkyl and alkoxy; R^4 is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio and



wherein A is selected from the group consisting of oxygen, sulfur and alkylene; Z is selected from the group consisting of alkyl alkenyl, alkoxy, alkylthio, halogen, nitro, cyano and dialkylamino; *m* is an integer from 0 to 1; and *n* is an integer from 0 to 5. The compounds of the above description possess valuable acaricidal properties.

3,733,415

ACARICIDAL COMPOSITIONS CONTAINING AN O-(2-ALKYL-4,6 - DINITRO-PHENYL)-O'-(α-CARBALKOXY-ALKYL)-CARBONATE

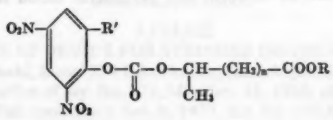
Heinz-Manfred Becher, Bingen (Rhine), and Richard Sehring, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Original application June 9, 1970, Ser. No. 45,274, now Patent No. 3,655,717. Divided and this application Nov. 12, 1971, Ser. No. 198,416

Int. Cl. A01n *9/20*

U.S. Cl. 424—301 **8 Claims**

Acaricidal compositions containing as an active acaricidal ingredient a compound of the formula



wherein

R is straight or branched alkyl of 1 to 12 carbon atoms,

R' is straight or branched alkyl of 1 to 8 carbon atoms or cyclohexyl, and

n is 0 to 1.

3,733,416

METHOD OF REDUCING INFLAMMATION, PAIN AND FEVER

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

No Drawing. Original application Oct. 10, 1968, Ser. No. 767,058, now Patent No. 3,704,313. Divided and this application June 23, 1971, Ser. No. 156,025

Int. Cl. A61k *27/00*

U.S. Cl. 424—308 **15 Claims**

A novel method of reducing inflammation, pain and fever in mammals by the administering of p-cycloalkylphenylglycolic acid and their derivatives is disclosed.

3,733,417

METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING POLYHALOALKAMINES

Roger C. Parish, King of Prussia, and John E. Trei, Malvern, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Dec. 19, 1969, Ser. No. 886,794

Int. Cl. A61k *27/00*

U.S. Cl. 424—322 **17 Claims**

Methods and compositions utilizing polyhaloalkamine derivatives improve the feed efficiency of commercial ruminant animals by inhibiting methanogenesis in the rumen. A preferred compound to be used as an active ingredient is N - (2,2,2 - trichloro-1-hydroxyethyl)acetamide.

3,733,418

METHOD OF TREATING HYPERLIPEMIA USING BIS(SUBSTITUTED PHENYL) ACETALS

Albert J. Frey, Essex Fells, and Mario G. Buzzolini, Morristown, N.J., assignors to Sandoz, Inc., Hanover, N.J.

No Drawing. Original application Feb. 7, 1969, Ser. No. 797,661, now Patent No. 3,578,712. Divided and this application Jan. 13, 1971, Ser. No. 106,254

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 **18 Claims**

The compounds are para-substituted bis-phenylacetals of N-amidinoglyoxylamide, and non-toxic acid addition salts thereof, e.g., bis(p-chlorophenyl)acetal of N-amidinoglyoxylamide, are useful for treating hyperlipemia. They are obtainable by reaction of an appropriate lower alkyl ester of bis(p-halophenoxy)acetic acid with guanidine.

3,733,419

CONTROLLING FUNGI AND BACTERIA WITH CERTAIN OXIME ESTERS

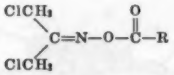
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 52,769, July 6, 1970, which is a continuation-in-part of application Ser. No. 879,967, Dec. 4, 1969, which in turn is a division of application Ser. No. 649,024, June 26, 1967, all now abandoned. This application Feb. 18, 1972, Ser. No. 227,610

Int. Cl. A01n *9/20*

U.S. Cl. 424—327 **20 Claims**

A process for controlling fungi and bacteria with compounds having the formula



in which R is alkyl having from 1 to 6 carbon atoms; haloalkyl having from 1 to 6 carbon atoms; or alkenyl having from 2 to 4 carbon atoms.

3,733,420

BIOCIDAL OCTYLDODECYL DIMETHYL AMMONIUM COMPOUNDS IN HARD WATER SOLUTIONS

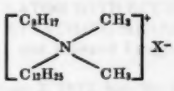
Reginald L. Wakeman, Philadelphia, Pa., and Edward G. Shay, Belle Mead, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Original application Dec. 4, 1968, Ser. No. 781,238, now abandoned. Divided and this application Mar. 26, 1971, Ser. No. 128,532

Int. Cl. A61k *27/00*; C02b *3/06*

U.S. Cl. 424—329 **4 Claims**

A method of inhibiting microorganisms in hard water aqueous solutions by using in hard water, water-soluble unsymmetrical di-higher alkyl dimethyl ammonium salts having the structure:



wherein X is a biocidally compatible anion preferably derived from a halogen such as bromine or chlorine. It is also possible to use methosulfate, although this is much less preferable because the resultant compound is not as effective and is also more difficult to make.

3,733,421

MICROBIOCIDAL NITROGEN DERIVATIVES OF HALOGENATED BIPHENYLS

John J. Merianos, Jersey City, Edward Griffin Shay, Belle Mead, Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 883,636, Dec. 9, 1969, now Patent No. 3,663,620. This application May 18, 1970, Ser. No. 38,513

Int. Cl. A01n *9/20*

U.S. Cl. 424—330 **1 Claim**

Microbiocidal bis-amino substituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

3,733,422

MOLLUSCICIDAL TRIFLUOROMETHYL p-NITRO DIPHENYL ETHERS

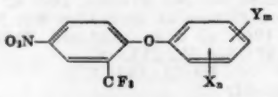
Otto Rohr, Therwil, and Marcus von Orelli, Munchenstein, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Application Apr. 1, 1970, Ser. No. 24,851, now Patent No. 3,647,888, which is a continuation-in-part of abandoned application Ser. No. 680,334, Nov. 3, 1967. Divided and this application Nov. 19, 1971, Ser. No. 200,608

Int. Cl. A01n *9/24*

U.S. Cl. 424—340 **6 Claims**

The present invention relates to compounds of the general formula



wherein X is a member selected from the group consisting of a halogen atom, an alkyl group having 1 to 4 carbon atoms, the group $—OCH_3$, $—SCH_3$, $—NO_2$ and $—CF_3$, Y is a member selected from the class consisting of a halogen atom and an alkyl group having 1 to 4 carbon atoms, and *n* and *m* denote integers from 0 to 3, whose sum is at most 5, as well as to molluscicidal preparation containing such compounds.

3,733,423

HYDROGENATED ERGOT ALKALOID COMPOSITIONS AND METHODS OF USING SAME

Botond Berde, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 691,142, Dec. 18, 1967. This application Nov. 23, 1970, Ser. No. 92,206

Claims priority, application Switzerland, Dec. 22, 1966, 18,385/66

Int. Cl. A61k *27/00*

U.S. Cl. 424—253 **15 Claims**

The invention concerns a novel hydrogenated ergot alkaloid composition comprising one part by weight of a hydrogenated ergot alkaloid constitutent selected from the group consisting of dihydroergocornine, dihydroergocristine, dihydroergocryptine, and their pharmaceutically acceptable acid addition salts, and between 10 and 150 parts by weight of 7-(2-hydroxypropyl)-theophylline.

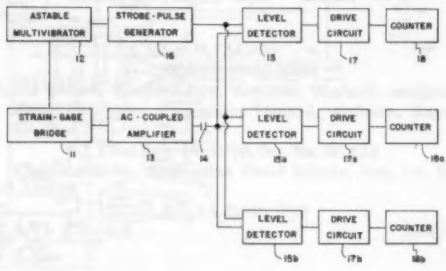
The 7-(2-hydroxypropyl)theophylline not only significantly enhances the enteral effect of oral effectiveness of the hydrogenated ergot alkaloid constituent, but various properties of the composition are superior to its individual components. The composition is particularly suitable for improvement of cerebral and peripheral blood flow.

ELECTRICAL

3,733,424
ELECTRONIC STRAIN-LEVEL COUNTER

Felix L. Pitts, Newport News, and John L. Spencer, Hampton, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautcs and Space Administration, Washington, D.C.

Filed July 8, 1971, Ser. No. 160,859
Int. Cl. G01b *7/16*
U.S. Cl. 73—88.5 R **2 Claims**

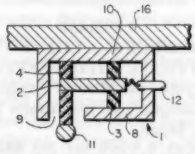


An electronic strain level counter for obtaining structural strain data on in-flight aircraft. The device counts the number of times the strain at a point on a structural member of the aircraft exceeds each of several preset levels. A dead band is provided at each level to prohibit the counting of small strain variations around a given preset level.

3,733,425
PICK UP DEVICE FOR STRINGED INSTRUMENT

Kouin Chaki, Inami 274 Edosakucho, Inashikigun, Japan

Continuation of Ser. No. 776,547, Nov. 18, 1968, abandoned. This application Nov. 8, 1971, Ser. No. 196,826
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.14 **5 Claims**



A piezoelectric pickup for stringed musical instruments comprising a piezoelectric element, a synthetic rubber vibration transmitting material attached to one end of the element, a support for the element at the other end thereof, and a weight attached to the vibration transmitting end of the element, the pickup being mounted in the resonance box of the instrument.

3,733,426
METHOD AND MATERIAL FOR RECLAIMING WATERLOGGED TELEPHONE CABLE AND THE LIKE

Stanley Kaufman, Flanders, and Raffaele Antonio Sabia, Lincroft, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1971, Ser. No. 208,420
Int. Cl. H01b *11/02, 3/30*
U.S. Cl. 174—23 C **3 Claims**

In-service PIC telephone cable that has become waterlogged in places is reclaimed dielectrically by pumping in an aromatic solvent oil containing cross-linking agents that will gel the oil in a predetermined period preferably of the order 24 hours. A nongelling prepurgent miscible with both water and aromatic solvent oil may be pumped in before the gelling compound is introduced, to more completely purge the water.

3,733,427
WATERPROOF ELECTRICAL CABLE

Michael Gordon Clark, and Saleem Subir Bhatty, both of Toronto 12, Ontario, Canada, assignors to Union Carbide Canada Limited, Toronto, Ontario, Canada

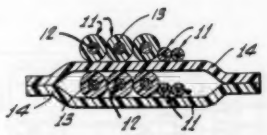
Filed May 11, 1972, Ser. No. 252,496
Int. Cl. H01b *7/30*
U.S. Cl. 174—23 C **11 Claims**

A cable filling composition comprising polybutene, microcrystalline wax, polyethylene and an antioxidant is disclosed which exhibits desirable electrical performance while having good handling characteristics and compatability with polyethylene cable insulation. The composition prevents water ingress in a telephone cable.

3,733,428
WIRING HARNESSES AND METHOD OF MAKING SAME

William Lawrence Fry, Haughton, England, assignor to Rists Wires Cables Limited, Newcastle, England

Filed July 8, 1971, Ser. No. 160,803
Claims priority, application Great Britain, July 11, 1970, 33786/70
Int. Cl. H02g *3/02*
U.S. Cl. 174—72 A **6 Claims**



A wiring harness for a road vehicle includes a plurality of conductive leads each of which includes a conductive core in a synthetic resin sheath. The individual leads of the harness extend side by side wherever possible, and are secured together by means of a synthetic resin backing member which is fused to the sheaths of the leads. The leads are positioned in a predetermined pattern, and the synthetic resin backing member is engaged with the leads. A fusing tool is engaged with the backing member and is operated to fuse the backing member to the sheaths of the leads. The backing member can be a preform in the shape of the harness pattern, or alternatively can be in a number of separate parts individually fused to the leads.

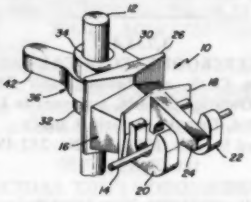
3,733,429
FENCE INSULATOR WITH ECCENTRIC POST-ATTACHING MEANS

Albert T. Berg, Jr., and Howard Langlie, both of Ellendale, Minn.

Filed Aug. 2, 1972, Ser. No. 277,294
Int. Cl. H01b *17/16;* **A01k** *3/00*
U.S. Cl. 174—161 F **10 Claims**

An all plastic insulator has a body provided with two upwardly facing jaws and an intermediate resilient tongue pro-

jecting from one side thereof so as to grip and hold an electric fence wire. Projecting from the other side of the body are two vertically spaced ears having aligned holes therein. Between the two ears is placed an eccentric member which also has a hole therein as well as a cam surface that pressurally bears against the body when the eccentric member is rotated suffi-



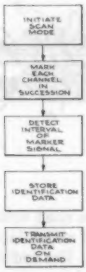
ciently by a handle or lever thereon. The camming action forcibly displaces the hole in the eccentric member with respect to the holes in the two ears, thereby forcing one wall portion of the hole in the eccentric member against the fence post and reactively forcing wall portions of the holes in the ears against the fence post to thus securely clamp the insulator at a desired elevation on the post.

3,733,430

CHANNEL MONITORING SYSTEM

John R. Thompson, Los Angeles, and Robert L. Schoenbeck, Santa Monica, both of Calif., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,818
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 **38 Claims**


INITIATE SCAN MODE
MARK EACH CHANNEL IN SUCCESSION
DETECT INTERVAL MARKER SIGNAL
STORE IDENTIFICATION DATA
TRANSMIT IDENTIFICATION DATA ON DEMAND

A novel remote monitoring system, described in the context of a cable antenna television system, which includes a control monitoring station for interrogating and monitoring various devices in a subscriber's remote site. The interrogation signals are transmitted by means of high frequency FM transmission via a trunk cable to a multitude of remote sites. Each remote site is addressed by a unique code and each remote site stores information indicative of the status of its respective monitored devices. Upon request from the control monitor station, such information is transmitted to the control monitor station by means of low frequency FM transmission via the aforementioned trunk cable.

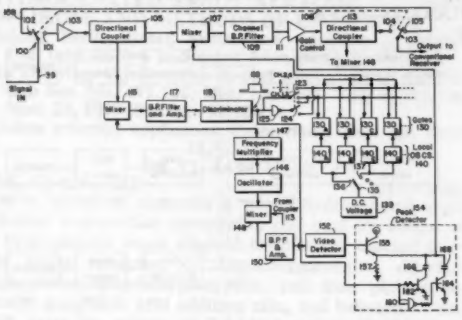
For tv channel identification, as for pay tv billing, each individual channel is marked with an identification signal which may be stored in the respective subscriber's remote unit until the control monitor station requests such information by interrogating the remote unit. The stored information is transmitted to the control monitor station and transferred to storage means, such as a computer, for billing or for other purposes.

3,733,431

ELECTRONIC COMMUNICATION APPARATUS EMPLOYING ENCRIPTED SIGNAL DISTRIBUTION

Donald Kirk, Jr., St. Petersburg, and Austin S. Coryell, Winter Haven, both of Fla., assignors to Television Communications Corporation, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,660
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 **2 Claims**



Private programming information, e.g., television programs provided for a community antenna television signal distribution system (CATV) to supplement those programs received from local commercial television stations, are encripted by switching the private program signals between predetermined transmission channels at a low, preferably nonperiodic rate. A modulated pilot carrier is provided to communicate synchronizing information.

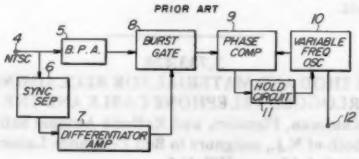
A special signal recovery apparatus at the station of a private service subscriber recovers the special programming by effecting a switching procedure inverse to that performed upon signal generation under control of the demodulated pilot signal. The video and sound programs presented by a conventional television receiver tuned to a private service channel comprises offensive interrupted bursts of two intermittently alternating programs which, moreover, may vary in intensity.

3,733,432

SYSTEM FOR PRODUCING A CONTINUOUS SIGNAL IN SYNCHRONOUS PHASE WITH A REFERENCE SIGNAL

Ichiro Arimura, Kyoto, and Hiroshi Taniguchi, Hirakata-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 8, 1969, Ser. No. 864,683
Claims priority, application Japan, Oct. 12, 1968, 43/74753; Nov. 11, 1968, 43/83112; Nov. 11, 1968, 43/83113; Mar. 5, 1969, 44/17295; Aug. 5, 1969, 44/75467
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 CD **6 Claims**



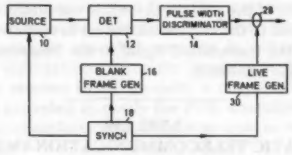
A system for producing a continuous signal in synchronous phase with the color-burst signal of a composite color television signal which is received through a transmission system subject to comparatively large time-base variations such as a VTR, said system including means for comparing in phase said

burst signal with the output of an oscillator whose oscillation frequency is nearly equal to that of the burst signal, the phase of oscillation of said oscillator being adjusted according to the detected difference of the phase; characterized in that said system also includes means for detecting variation in the frequency of the synchronizing signal contained in the television signal, the frequency of said oscillator also being adjusted according to the amount of the detected variation, thereby to extend the frequency range in which said oscillator can be pulled into the synchronization; and a method for demodulating the coded color signals utilizing the above-described system.

3,733,433
IMAGE ANALYSIS

Colin Fisher, Hertfordshire, Royston, England, assignor to Image Analysing Computers Limited, Melburn, Royston, England

Filed Nov. 19, 1970, Ser. No. 90,932
Claims priority, application Great Britain, Nov. 24, 1969, 57,320/69
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **15 Claims**



The invention provides a method of analyzing the features in a field of view in which information arising from features which are truncated by one or more edges of the field of view, is inhibited. Methods and apparatus for performing a chord size distribution on scanned video signal are described together with methods and apparatus for correcting associated parameter information derived from scanned video signal.

Two types of solution are envisaged. According to one solution, all information signals arising during a selected distance within the scanning raster are inhibited. Thus, chord count pulses or associated parameters which appear within a certain time interval from the edges of the scan raster are either not generated or inhibited. According to a second solution, an information signal is only inhibited if, when dealing with line scan intersects of features, the line scan intersect from which the information signal arises begins or ends on an edge of the scan raster or in the case of associated parameters, the feature or area of the image for which the associated parameter is computed touches or intersects one or more edges of the scan raster.

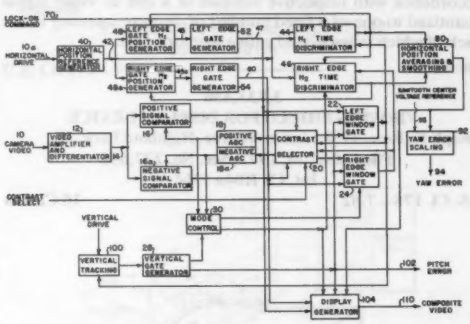
The correction is applied in both line and frame scan directions.

3,733,434
TIME DISCRIMINATOR CIRCUIT FOR EDGE TRACKING TARGET CONTOURS

Myron Weinstein, Munroe Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed June 1, 1970, Ser. No. 42,185
Int. Cl. H04n *1/38*
U.S. Cl. 178—6.8 **4 Claims**

The invention relates to a circuit utilizing a television signal to track the edges of an object, (hereinafter called the target) to provide position and guidance information. The object may be standing still or moving and the television camera with tracking circuitry may be standing still or moving. The unique feature is in the ability to track a contour to one or both sides

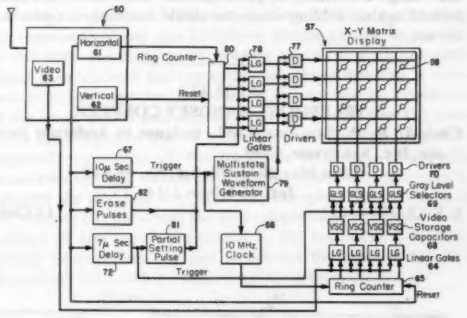


of the target so as to enable tracking to cover irregular targets with better resolution, and without tracking loss. The absolute position of the target edge is tracked and is updated on each line of TV video that crosses the target edge.

3,733,435
INTEGRAL MEMORY IMAGE DISPLAY OR INFORMATION STORAGE SYSTEM

Gerald J. Chodil, Harwood Heights, and Michael C. DeJule, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,319
Int. Cl. H04n *5/66*
U.S. Cl. 178—7.3 D **14 Claims**



A memory system includes an array of memory elements, each of which is set to one of three or more memory states independently from the other elements by means of storage of one of a corresponding number of associated setting voltages. Readout of the memory-state information thus preset is accomplished by applying to the entire array a signal having a special periodic pulsed waveform with each memory state being associated exclusively with a different portion of the waveform, and each memory element responds only to that portion of the waveform associated with its particular preset state. The memory elements, each of which includes s capacitor in series with a bidirectional switch having both a high and a low impedance and characterized by a "breakback" response, "remember" their respective states throughout, until again reset to another state. A light valve or light source may be associated with and controlled by each memory element, thus affording an image display. Each memory state may be associated with an intensity or brightness level by modifying the waveform so that a different duty factor is as-

sociated with each memory state. A complete television image display incorporating a matrixed array panel of memory-display elements is described in which gray scale with storage is achieved by controlling the memory states, and thus the duty factors, of the respective elements of each row of the panel in accordance with respective samples of a line of video signal quantized to one of a fixed number of discrete intensity levels each of which is associated with a memory state.

3,733,436

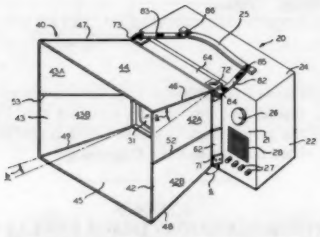
VIEWING SHIELD FOR DISPLAY DEVICE

Joseph K. Rose, 1958 Linden Avenue, Highland Park, Ill.

Filed Mar. 24, 1972, Ser. No. 237,652

Int. Cl. H04n *5/64*

U.S. Cl. 178—7.82 **10 Claims**



A four-sided light shield assembly for a television receiver or other image-exhibiting apparatus, in which the side panels have a hinged construction allowing the assembly to be folded to flat, compact form without detachment or separation of any of the components, when the shield assembly is removed from the image-exhibiting apparatus, but with the side panels locked against folding when the shield assembly is opened up for use.

3,733,437

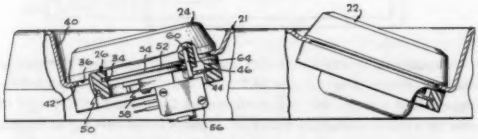
TELEPHONE HANDSET COUPLER

Craig L. Keith, San Jose, Calif., assignor to Anderson Jacobson, Inc., Sunnyvale, Calif.

Filed May 20, 1970, Ser. No. 39,048

Int. Cl. H04m *1/14*

U.S. Cl. 179—1 C **12 Claims**



Apparatus for acoustically coupling a telephone handset to transducers of a data terminal, comprising a pair of cup-like coupling members of rubber or other elastomeric material for holding the mouthpiece and earpiece ends of the handset. Each elastomeric coupling member has an inner wall for snugly receiving a handset end and for holding a data transducer below it, an outer wall that encircles the inner wall and that can be mounted on the data terminal, and a thin membrane that connects the upper ends of the inner and outer walls to support the inner wall while largely isolating it from vibrations.

3,733,438

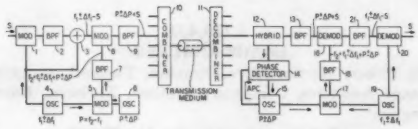
CARRIER SUPPLY FOR FREQUENCY DIVISION MULTIPLEXED SYSTEMS

Thomas John Haley, Summit, N.J.; Thomas Bennett Merrick, Plaistow, N.H., and James Sayre Ronne, Groveland, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 1, 1971, Ser. No. 119,750

Int. Cl. H04j *1/06*

U.S. Cl. 179—15 FD **12 Claims**



The terminals in the frequency division multiplexed systems of the prior art employ many steps of modulation whose frequency variations, due to changes in the frequencies generated by the carrier oscillators, add to produce a frequency offset which is unacceptable in modern wideband systems. The terminals of the present invention use additional modulators connected to the carrier oscillators to reduce the frequency offset of the transmitted signal to the frequency variations of only a single oscillator.

3,733,439

AUTOMATIC TELECOMMUNICATION SWITCHING SYSTEM

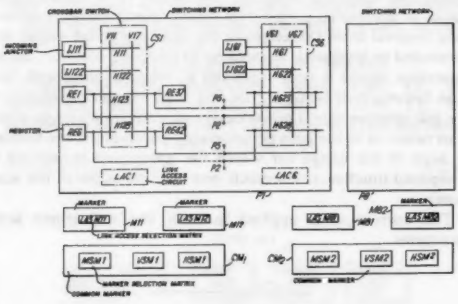
Henri Albert Julia Verhille, B-2200 Borgerhout, and Oswald Pieter Maria Donkers, B-2100 Deurne, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,681

Claims priority, application Netherlands, Dec. 31, 1969, 6919631

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 E **13 Claims**

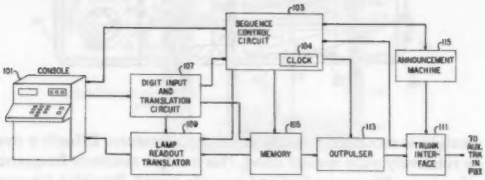


In a crossbar switching system, the functions of marker circuits are broken down such that there are two common marker circuits for the entire system and two regular marker circuits for each group of crossbar switches. Each marker circuit of each type has a selection matrix, the common marker being used to select the regular marker circuit to be used. The use of common markers reduces the possibility of double testing, reduces the equipment necessary and speeds switching.

3,733,440
SEMIAUTOMATIC CALL PLACEMENT AND MESSAGE DELIVERY ARRANGEMENT

James David Sipes, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 19, 1971, Ser. No. 163,743
Int. Cl. H04m 3/42
U.S. Cl. 179—18 B 16 Claims

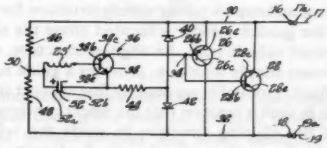


An arrangement is disclosed as an applique to a PBX to allow a PBX attendant to originate a series of message delivery calls. The attendant dials in PBX station numbers to which the message is to be delivered. These numbers are temporarily stored in a memory and sequentially outpulsed to the PBX in the order in which they were dialed by the attendant. The PBX then establishes a connection from the arrangement to a station identified by an outpulsed number. When the party at that station answers, a recorded message is connected to the established connection. After the message is delivered, the next station number in the memory is outpulsed to the PBX. Circuitry is provided to notify the PBX attendant when there is a failure to complete call if there is no answer or if the called station is busy.

3,733,441
AMBIPOLAR MICROPHONE UNIT

David P. McCorkle, South Bend, Ind., and Lee P. Hagey, Buchanan, Mich., assignors to Electro-Voice Inc., Buchanan, Mich.

Continuation-in-part of Ser. No. 881,648, Dec. 3, 1969, abandoned. This application June 14, 1971, Ser. No. 152,614
Int. Cl. H04q 1/00
U.S. Cl. 179—81 B 16 Claims

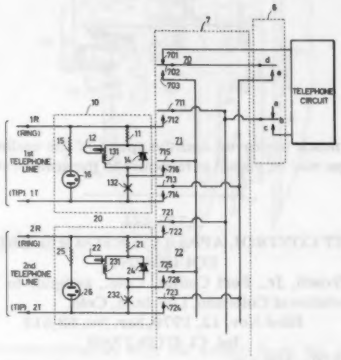


A microphone unit for incorporation in a telephone headset or the like including a low signal output transducer, and a polarity independent current control amplifier circuit for amplifying the transducer signals and having a pair of substantially identical parallel oppositely connected main current control devices, such as transistors, each having their load terminals arranged for controlling current flowing in a normal forward direction which is opposite to that of the other so that there will always be one fully conductive and one partially conductive or nonconductive path across the microphone unit terminals independently of the polarity of the D.C. current to be modulated by the microphone unit. Drive circuit means energized by the voltage on the telephone lines applied to the microphone unit terminals are provided to receive the transducer signals and amplify the same before being applied to the control terminals of the current control devices regardless of the polarity of the energizing voltage.

3,733,442
HOLD CIRCUIT FOR MULTI-LINE KEY TELEPHONE SYSTEM

Allan Yook Foo Lee, London, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Jan. 18, 1971, Ser. No. 107,352
Int. Cl. H01m 1/72
U.S. Cl. 179—99 3 Claims



A multi-line key telephone system comprising a plurality of telephone stations each of which has access to a plurality of telephone lines. Individual line-holding circuits are provided, which are connected to or connectable with any one of the individual line circuits and any one of the individual telephone station circuits. Each holding circuit has a resistive coil in series with a reed switch with an equivalent resistance exceeding the resistance of any one telephone station circuit. In parallel to the reed switch in each holding circuit is a circuit path which goes through the respective telephone line key, a common hold key, and the hook switch. In each station operation of the hook switch and depression of a selected line key connects the telephone circuit to a selected telephone line. Subsequently operation of the common hold key electrically completes the said circuit path and so shorts the reed switch, releases the said line key, and then energizes the coil to lock the holding circuit across the said telephone line. Further connection of any telephone circuit to the telephone line sufficiently de-energizes the coil to release the reed switch and disconnect the holding circuit from the telephone line.

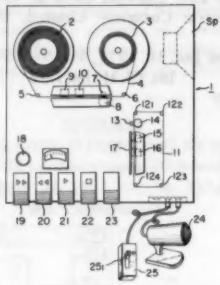
3,733,443
SPEED CONTROL SYSTEM WITH CONTROL SIGNALS ON ONE TAPE USED TO CONTROL SPEED OF SECOND ENDLESS TAPE

Yasutaka Iwawaki, Ohta-ku, Tokyo; Minoru Yoshikawa, Kawasaki-shi, Kanagawa, and Yukio Usui, Asahi-ku, Yokohama-shi, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1971, Ser. No. 140,355
Claims priority, application Japan, May 8, 1970, 45/39423
Int. Cl. G11b 15/52
U.S. Cl. 179—100.2 S 9 Claims

The audio signals are recorded on the two tracks of the tape in phase and the control signals for automatically stopping the main tape and for varying the tapespeed of the endless tape are recorded on the respective tracks so as to be out of phase by 180°, so that the audio signals and the control signals may

be derived independently as the summation and difference signals. Therefore the recording capacity of a magnetic tape



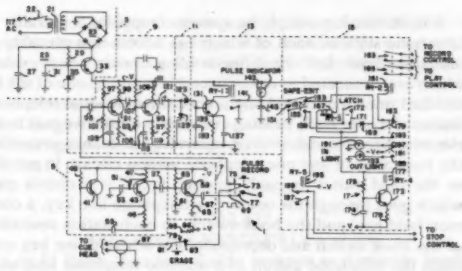
may be much improved and the speed of the endless or auxiliary tape may be varied in response to the control signals.

3,733,444

EDIT CONTROL APPARATUS FOR RECORDING EQUIPMENT

James French, Jr., Fort Collins, Colo., assignor to Video Aid Corporation of Colorado, Loveland, Colo.

Filed Nov. 12, 1970, Ser. No. 88,615
Int. Cl. G11b *27/08*
U.S. Cl. 179—100.2 B **1 Claim**



Edit control apparatus for recording equipment comprising, a signal generator for developing first and second cue signals for input to the recording equipment; a signal selector for enabling the first and second cue signals to be recorded by the recording equipment; a signal detector responsive to the recorded cue signal and operative to develop a first output signal, and responsive to the second recorded cue signal and operative to develop a second output signal; and a control network responsive to the first output signal and operative to develop an edit-in signal for actuating the edit-in control of the recording equipment, and responsive to the second output signal and responsive to the second output signal and operative to develop an edit-out signal for actuating the edit-out control of the recording equipment.

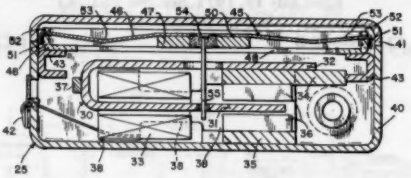
3,733,445

INERTIAL REACTION TRANSDUCERS

George J. Sebesta, and Richard W. Carlisle, Hicksville, N.Y., assignors to Dyna Magnetic Devices, Inc., Hicksville, N.Y.

Continuation of Ser. No. 650,776, July 3, 1967, abandoned. This application Feb. 17, 1971, Ser. No. 116,260
Int. Cl. H04r *11/04*
U.S. Cl. 179—115 A **5 Claims**

An acoustic transducer having good speech intelligibility with inherent significant suppression of ambient noise. Incorporates inertial mass reaction in efficient, compact and lightweight arrangement. In one form includes a predetermined weight or block suspended by a vibratory diaphragm and linked to the electro-mechanical or motor section, to impart a specific upper resonant frequency. In another, the



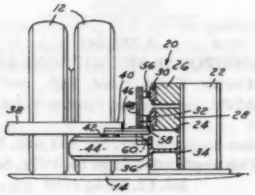
weight is mounted directly upon the armature. Effective over a relatively wide speech band. Has a single resonant frequency that is readily controlled and manufactured. Provides inherent roll-off beyond this frequency to extend response, yet substantially reduce noise. Applications include: contact head microphone; in-mask microphone; in-ear receiver.

3,733,446

GUIDED VEHICLE POWER SUPPLY SYSTEM

Denny D. Colovas; John S. Logan, and Richard R. Skruch, all of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 14, 1971, Ser. No. 152,641
Int. Cl. B60l *5/08*
U.S. Cl. 191—49 **3 Claims**



A power supply system for a vehicle which is guided along a predetermined path is disclosed. The power supply system has the following makeup. A power supply structure for supplying power to the guided vehicle is located along the side of the predetermined vehicle path. An aligning structure, associated with the power supply structure, provides a guide surface. An aligning wheel is rotatably secured by first support structure to the vehicle in such a position that the wheel contacts the guide surface of the aligning structure to guide the vehicle as it passes along the predetermined path. A plurality of current collectors, for engaging the power supply structure, are secured by second support structure to the first support structure in a position adjacent the aligning wheel. This second support structure resiliently supports the plurality of current collectors in engagement with the power supply structure.

3,733,447

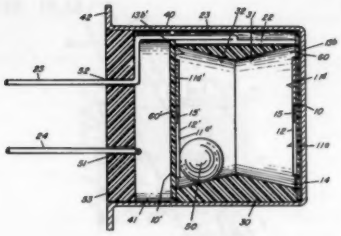
TILT RESPONSIVE INERTIA SWITCH WITH PRINTED CIRCUIT AND MOVABLE BALL CONTACT

Clayton J. Schneider, Jr., E. Aurora, N.Y., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 2, 1971, Ser. No. 204,105
Int. Cl. H01h *35/02, 35/14*
U.S. Cl. 200—61.52 **5 Claims**

This invention relates to a printed circuit, intermittent, normally open, single pole electric switch designed to become

operative upon the receipt of a tilt motion. The device uses a housing means, a printed circuit contact terminal means supported in the housing, a conducting ball having a first radius of curvature, operatively positioned adjacent to the contact terminal means which responsively moves when the switch is



tilted, and momentarily closes the contact terminal means; an insulated track means is positioned intermediate to the printed circuit contact terminal means, insulating the housing from the contact terminal means while maintaining the conducting ball operatively adjacent to the contact terminal means.

3,733,448

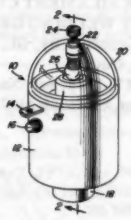
INERTIA TYPE SWITCH WITH ADJUSTABLE SELECTIVE SEATING SURFACE FOR MOVABLE CONTACT

Clifford H. Brady, P.O. Box 812, Sulphur Springs, Tex.

Filed Jan. 11, 1972, Ser. No. 217,053

Int. Cl. H01h *35/02*

U.S. Cl. 200—61.45 R **11 Claims**



A movement responsive switch assembly comprising a housing, a vertical conductive post reciprocally mounted in the housing and including inner and outer elements threaded together to define a seat of adjustable depth for supporting a conductive ball, and an adjustable stabilizing spring depending from the housing to apply stabilizing forces to the top of the ball, which together with the seat depth determines the directions and magnitude of the forces under which the ball is dislodged to effect switching.

3,733,449

PUMP PROTECTION SYSTEM WITH PRESSURE RESPONSIVE SWITCH AND FLOAT VALVE

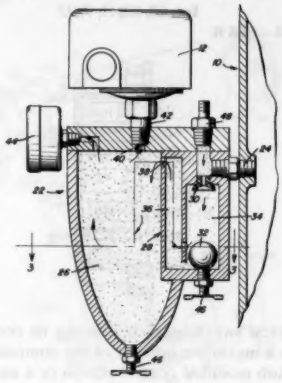
Laurence J. Parker, Guthrie, Okla., assignor to George C. Chiga, Guthrie, Okla., a part interest

Filed Sept. 22, 1971, Ser. No. 182,727

Int. Cl. H01h *35/24*

U.S. Cl. 200—81 R **6 Claims**

A safety cutoff device mounted on a pressure tank between the tank and the pressure activated pump switch for automatically locking the switch open upon the reduction of air in the tank to the point at which damage could result to the pump electrical system should the pump be allowed to continue to operate. The safety cutoff includes a float valve which is activated to segregate a pressure accommodating auxiliary tank



in direct communication with the switch from the pressure tank upon the reduction of air and elevation of water level in the pressure tank to a predetermined point. The air, under pressure, locked within the auxiliary tank in turn locks the switch open and in effect deactivates the entire system until reset.

3,733,450

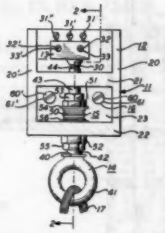
OVERLOAD SAFETY SWITCH APPARATUS

Charles K. Ridge, 71 Norwood Avenue, Upper Montclair, and Jack R. Allen, 16 Oak Tree Lane, Bloomfield, both of N.J.

Filed Oct. 18, 1971, Ser. No. 190,123

Int. Cl. H01h *3/14*

U.S. Cl. 200—85 R **2 Claims**



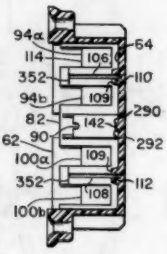
An overload safety switch apparatus. Direct switch-to-load movable connection-contact means are provided for supervision of the load hoisting operation, and resilient load-sensing means are provided for use in the safety switch apparatus, to thereby provide an overload safety switch device which supervises load-lifting electrically-operable hoist operation to interrupt the electrical hoist circuit in the event that the lift load exceeds the programmed maximum safe load weight, to safely shut down the hoist operation thereby.

3,733,451

ELECTRIC SWITCH ASSEMBLY FOR CONTROL STATIONS HAVING RECTILINEARLY OR ROTATABLY MOVABLE SWITCH OPERATORS LOCATED AT DIFFERENT CENTERS

Rudolf H. Kiessling, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Mar. 23, 1972, Ser. No. 237,382
Int. Cl. H01h 9/02
U.S. Cl. 200—168 R 18 Claims



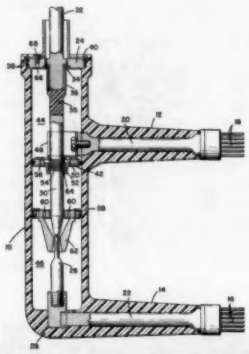
An electrical switch assembly having its component parts arranged so a maximum number of the common parts can be used in a flush mounted control station or a surface mounted control station with either of the control stations having rectilinearly moving or rotatable switch operators. The assembly includes components which operate on selected centers so the components may be selectively arranged to be used with two different switch covers, two different type switch actuators and with or without a pilot light. The components also are arranged so the rectilinearly movable operators may be interlocked or made to operate alternately and the rotary operator to be programmed to operate in a two or three position mode of operation.

3,733,452

PRESSURE EQUALIZATION MEANS BETWEEN COMPARTMENTS IN A PUFFER CIRCUIT INTERRUPTER

Francois Strippoli, and Guy Combet, both of Grenoble, France, assignors to Merling Gerin, Societe Anonyme, Grenoble, France

Filed Feb. 5, 1971, Ser. No. 112,887
Claims priority, application France, Feb. 16, 1970, 7005501
Int. Cl. H01h 33/70
U.S. Cl. 200—148 A 9 Claims



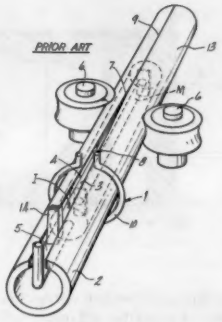
A puffer type fluid blast circuit interrupter having a gas tight casing subdivided into two compartments. In the opened position of the interrupter the two compartments communicate freely to permit a rapid equalization of the pressures in the whole casing. An escape valve opens in the case of an excess of pressure in one compartment to allow escape of pressure into the other compartment.

3,733,453

HIGH FREQUENCY WELD BOX

Charles D. McLain, Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 18, 1972, Ser. No. 227,472
Int. Cl. H05b 5/02
U.S. Cl. 219—8.5 16 Claims



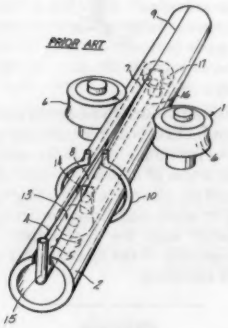
A weld box and an apparatus for welding metal strip into tubing having improved electrical efficiency. The improvements in electrical efficiency are obtained by shielding magnetic components of the weld box from the induction field of the induction coil which is employed. Alternatively, and preferably, those magnetic parts which are exposed to the induction field have been formed of non-magnetic materials such as copper and copper base alloys. Further, short circuit paths within the weld box have been substantially eliminated by interposing insulating means between components of the weld box in the short circuit path which do not move with respect to one another.

3,733,454

OSCILLATOR TUBE FILAMENT CIRCUIT FOR HIGH FREQUENCY WELDING GENERATOR

William R. Schwartz, Granite City, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 17, 1972, Ser. No. 227,179
Int. Cl. H05b 5/02
U.S. Cl. 219—8.5 7 Claims



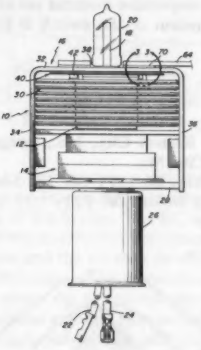
A high frequency welding apparatus for obtaining consistently high quality welds in metals, particularly those having low magnetic permeabilities and high thermal conductivities. The filament supply to the oscillator tube or tubes of the current generator has been changed from an A-C supply to a D-C supply having a low ripple or no ripple at all. The output stability of the current generator is thereby improved by decreasing the ripple on the output current to less than 6 percent.

3,733,455

POSITIVE LOCKING MECHANICAL COUPLING ARRANGEMENT

Richard A. Foerstner, Iowa City, Iowa, and James R. Mims, Acton, Mass., assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed June 11, 1971, Ser. No. 152,309
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 6 Claims



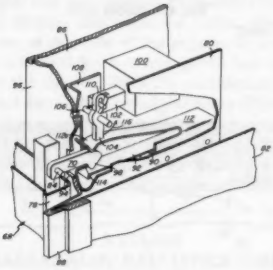
A positive locking arrangement is disclosed for coupling with the wall portion of the first component carrying the locking means sandwiched in between. A rotatably actuated locking ring member having a spaced clearance hole and connected slot arrangement together with ramp bearing and spring force exerting means is adapted to receive and retain in the hole portion stud members positioned in a second component. The components are interlocked by a rotational movement of the ring member. Rotation in a reverse direction unlocks the components. In an illustrative embodiment a magnetron energy generator having an external magnetic field producing means and incorporating the mechanical arrangement is supported by appendages in the launching waveguide section of a high frequency heating apparatus.

3,733,456

MICROWAVE OVEN DOOR LATCH

Louis W. Blackburn, Norway, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Sept. 7, 1971, Ser. No. 178,044
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 5 Claims



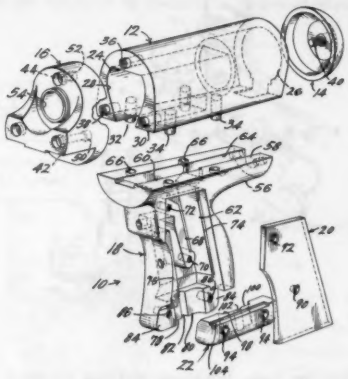
An electrically actuated arrangement for securing the door of a microwave oven apparatus while the energy is radiating within the enclosure. The door can only be opened by the user after the heating source has been de-energized. Mechanical latching structures are eliminated and the novel door latch is adaptable to either the side-mounted swinging oven door as well as the drop down model.

3,733,457

STUD WELDING TOOL CONSTRUCTION

Howard N. Wieland, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 722,607, April 19, 1968, abandoned. This application May 20, 1970, Ser. No. 51,030
Int. Cl. B23k 9/20
U.S. Cl. 219—98 1 Claim



The body of a stud welding tool is made of a plurality of separate parts. The main housing of the tool thereby can be employed for different applications without the necessity of designing and molding a different housing for each application. The handle of the welding tool body is made of several portions which enable an operator to have access to the interior more readily and more easily. The welding tool also has an internal component through which current is supplied to a chuck of the tool, and which causes fasteners to be transferred from a point behind the chuck into the chuck. The component is compact and relatively maintenance free. In particular, the welding tool can be substantially shorter and lighter than those of a like nature heretofore employed.

3,733,458

FLUX CORED ELECTRODE

Igor Konstantinovich Pokhodnya, Pereulok Mechnikova, 3, kv. 21; Vladimir Nikolaevich Golovko, Pechersky spusk, 18, kv. 77, and Alexandr Mikhailovich Suptel, ulitsa Vladimirskaya, 95, kv. 29, all of Kiev, U.S.S.R.

Filed July 8, 1971, Ser. No. 160,920
Int. Cl. B23k 35/22
U.S. Cl. 219—146 1 Claim

A continuous welding electrode for shielded-gas welding and building-up of steels consisting of 25 to 35 percent by weight of a powdery core in a steel envelope, the core consisting of the following components taken in per cent by weight:

rutile concentrate	20–40
ferromanganese	10–13
feldspar	0.6–6.0
sodium fluosilicate	0.6–4.6
ferrosilicon	0.6–2.0

the balance being iron powder.

3,733,459

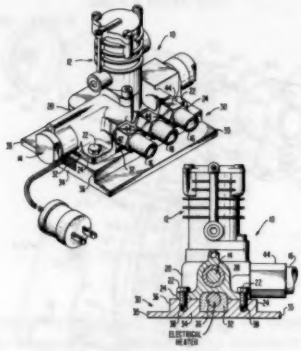
INTERNAL HEATING DEVICE FOR AIR VALVES

Clifford M. Lengstorf, Route No. 1, Whitefish, Mont.

Filed Feb. 9, 1971, Ser. No. 113,947
Int. Cl. H05b 1/00; F16k 49/00
U.S. Cl. 219—201 5 Claims

An electrical heating device for valves is presented. The device prevents freezing of water vapor normally present in

the compressed air used in pneumatic systems, and thereby allows the use of the compressed air machinery under prolonged low temperature conditions. The device consists of an insulated, electrical heating element which is mounted under any conventional pilot valve, abutting the lower surface valve base. A metal mounting plate having a recess for receiving the heating element is affixed to the valve base and holds the element against the base. Insulating material having a central depression is placed in the recess with the material substantially surrounding the element. The insulating material also extends between the base and the plate to channel heat from the element into the base. The element may be coupled to any conventional power source and is designed to heat the entire valve body.

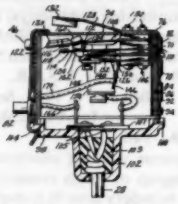


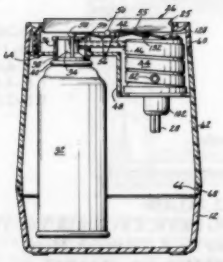
3,733,460

APPARATUS FOR HEATING DISPENSED FLOWABLE MATERIAL

William D. Ryckman, Jr., Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Sept. 15, 1971, Ser. No. 180,582
Int. Cl. H05b *1/02*; **B67d** *5/62*
U.S. Cl. 219—308 **10 Claims**





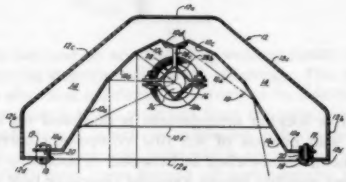
Apparatus for heating flowable material dispensed from a pressurized container includes a housing to receive the pressurized container and a heat exchanger assembly having a passageway through which the material to be heated flows. Enclosed inside the heat exchanger is an electric heating element and a thermal switch assembly for controlling the heating element. The switch assembly has first and second electric current conducting contact blades resiliently biased in the same direction and supported by insulators at one end in spaced relationship. The switch assembly has a pivotal cam element that cooperatively acts on both blades and there is a stop member movable to prevent the cam element against pivoting in one direction and is released from its stop position by a temperature responsive element set at a predetermined temperature. Operation of the switch is initiated by a two-position actuator.

3,733,461

RADIANT HEATER

Frank J. Rohats, Kansas City, Mo., assignor to Robert L. Powell, Kansas City, Mo.

Filed May 26, 1971, Ser. No. 146,877
Int. Cl. H05b *1/00*; **F21v** *7/12, 29/00*
U.S. Cl. 219—343 **2 Claims**



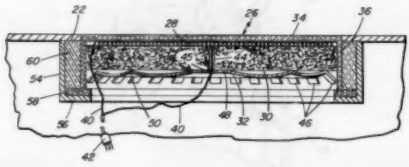
A radiant heater having a trough-shaped reflector comprising a plurality of elongated planar sections joined edge to edge in such angular relationship that the trough has a substantially parabolic contour in transverse cross section. The sections immediately adjacent to and on either side of the vertex of the parabola are bent to form an inwardly directed V-shaped rib which reflects heat rays away from an elongated heat generating element positioned at the focus of the parabola. The reflector is housed within an outer shell in spaced relationship thereto, the space between the two being open to the atmosphere along the lateral edges of the reflector and via apertures located in the central section of the shell.

3,733,462

HEATING ELEMENT FOR FLUSH TOP RANGES

Kenneth G. Bouchard, Brighton, and Wesley W. Teich, Wayland, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 11, 1972, Ser. No. 217,012
Int. Cl. H05b *3/68*
U.S. Cl. 219—464 **10 Claims**

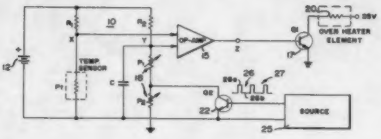


A flush top range having replaceable heating units comprising a sandwich structure which includes a coiled heater element and heat conducting or infrared transmitting disc having a substantially planar surface, and cable means for easily connecting the unit into range circuitry with the planar surface of the disc being adapted to lie substantially in the plane of the adjoining surfaces of the range cooktop.

3,733,463
TEMPERATURE CONTROL SYSTEM WITH A PULSE WIDTH MODULATED BRIDGE

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Richard C. Heyser, Tujunga, Calif.

Filed Dec. 24, 1970, Ser. No. 101,214
Int. Cl. H05b 1/02
U.S. Cl. 219—499 8 Claims

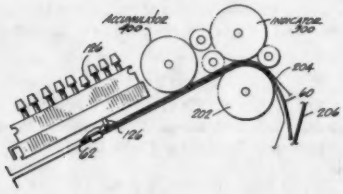


A temperature control system is disclosed which includes a modified wheatstone bridge with a resistive-capacitive (RC) circuit in one leg of the bridge. The RC circuit includes a resistor which provides an effective resistance as a function of its absolute resistance and the on-time to off-time ratio of pulses supplied to a switch connected thereacross. A sawtooth voltage is produced across the RC circuit, the voltage being compared with the voltage across a temperature sensor, with heat being applied during each pulse period portion when the sawtooth voltage exceeds the voltage across the temperature sensor.

3,733,464
BUSINESS MACHINE

Kenneth F. Oldenburg, Arcadia, Calif., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed June 26, 1970, Ser. No. 50,064
Int. Cl. G07g 1/00
U.S. Cl. 235—23 RC 21 Claims



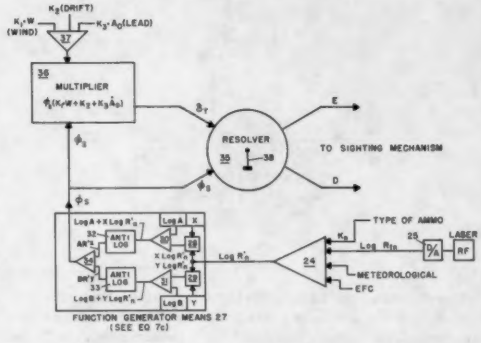
A cash register is provided with a flexible plastic digit tape to interconnect the cash register display with the selected depressed digit keys. The plastic digit tapes are very flexible and lightweight, and are operated to transmit force under tension to avoid binding and frictional forces. The digit tape is deflected down at the rear of the register to save space. The accumulator is moved down to engage the tape and to the rear to transfer to the display. Both the accumulator and the display assemblies have interleaved indicator wheels having different indications, with the wheel spacing and movement being unitarily related to the keyboard spacing. Light duty components and simple controls, compatible with the low inertia of the digit tapes are used throughout the cash register.

3,733,465
LOG-BASE ANALOG BALLISTICS COMPUTER

Paul M. Marasco, Cherry Hill, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 16, 1971, Ser. No. 153,681
Int. Cl. G06g 7/80
U.S. Cl. 235—61.5 E 3 Claims

An electronic analog ballistics computer wherein various ballistics correction analog signals as well as the log of the range from a range finder, either optical or one employing the laser principle are applied to a summing amplifier whose output is effectively the log of the adjusted range (R_n'). Since the superelevation ϕ_s is a function of range for any specific ammunition and constitutes a family of graphic functions for the various ammunitions, an intermediate selected ϕ_s function is generated such that when the log R′ signal is provided as an input the output will be the superelevation therefor. The superelevation ϕ_s is then applied to a multiplier into which is also fed the output of an operational amplifier which receives

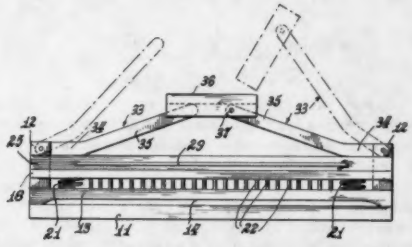


the lateral correction factors and effectively sums them. Thus, the multiplier output constitutes the total horizontal correction and when applied with the superelevation ϕ_s to a resolver whose other input which may be internal is the cant angle, the resultant output provides the total elevation above the line of sight and the total lateral deflection from the line of sight in the gun axis with only the necessity of a single function generator. These output signals can then be applied to the sighting mechanism to correct the reticle for the total of all ballistic factors.

3,733,466
PERFORATING DEVICE

Raymond D. Krumrey, 31 South Clifton, Elgin, Ill.

Filed Aug. 2, 1971, Ser. No. 167,971
Int. Cl. G06k 21/06, 1/02; B26f 1/04; B44b 5/02
U.S. Cl. 235—61.6 E 7 Claims



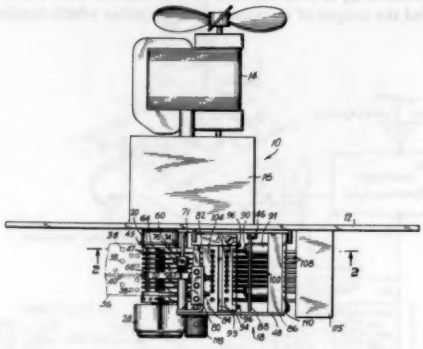
A multiple perforator for grading examination papers or score sheets of a type including a multitude of punches all or some of which are actuated upon manipulation of a hand actuated lever system to perforate such papers or sheets.

3,733,467

PERFORATED TAPE READER

Carl Bayer, Jr., Hackensack, and Robert Kelly, Old Tappan, both of N.J., assignors to Data Peripheral Inc., Hackensack, N.J.

Filed Sept. 13, 1971, Ser. No. 179,879
Int. Cl. G06k 7/04
U.S. Cl. 235—61.11 C 10 Claims



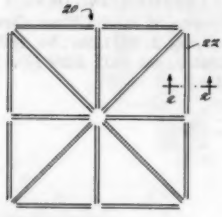
A perforated tape reader having a rotatable capstan engaging the tape for advancing same. Perforation in said tape are detected along an axis substantially transverse thereto by an array of pivotally mounted star wheels and a data signal is produced in response to such detection. A plurality of apertures are circumferentially spaced in the surface of said capstan out of registration with said tape, and a timing signal is produced in response to the detection of said apertures by a further pivotally mounted star wheel.

3,733,468

TWO TRACK EMBOSSING PRODUCT

David H. Eberly, Jr., Fairfield, Conn., assignor to United States Banknote Corportion, New York, N.Y.

Filed Mar. 18, 1970, Ser. No. 20,783
Int. Cl. G06k 19/00, 19/02; G09b 11/04
U.S. Cl. 235—61.12 R 8 Claims



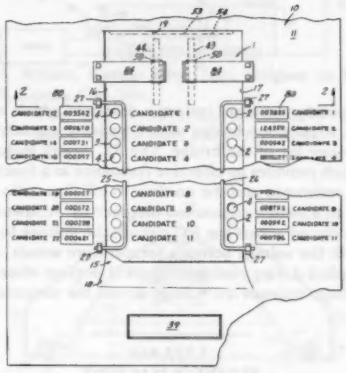
A method of producing a matrix or similar structure adapted for being used to manually produce alpha-numerical characters in a form suitable for quick and accurate reading by a relatively simple optical scanner or similar device whereby each character is formed by manually tracing over a combination of traceways in the matrix and whereby each traceway is bounded by two rails or tracks, raised with respect to the traceway so as to guide the writer in manually following each traceway with a marker to form the alpha-numerical characters so that the characters can be manually produced quickly, accurately and easily. The tracks or rails can be themselves elevated or the traceway can be formed as a groove in paper or other medium. The two raised tracks or the groove can be formed on paper or other medium by thermographic processes, reverse intaglio, blind embossing, intaglio printing, dye stamping, impressing hot or cold rolling die against a paper or foil printing as discussed below.

3,733,469

COUNTING DEVICE FOR PUNCH TYPE BALLOT CARD

Peter C. Meyer, 3030 Bridgeway, San Rafael, Calif.

Continuation of Ser. No. 849,827, Aug. 13, 1969, abandoned.
This application Sept. 15, 1971, Ser. No. 180,854
Int. Cl. G06k 7/04; G07c 13/00
U.S. Cl. 235—61.6 R 6 Claims



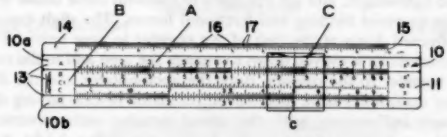
A counting device especially adapted for counting votes made on a punch type ballot card wherein selections are made by the voter by punching holes at predetermined index point areas. The device provides means for counting all selections on the card simultaneously and permits interruption of the counting cycle to enable viewers to visually inspect the count. Means is provided for ejecting the card from the device.

3,733,470

SLIDE RULE OF GENERAL USE OF POCKET SIZE

Iosif Hondrea, Timisoara, Romania, assignor to Iprofil-"Tennolemn"-Industria Produselor Finite Din Lemn, Timisoara, Romania

Filed June 21, 1971, Ser. No. 154,744
Int. Cl. G06g 1/06
U.S. Cl. 235—70 R 5 Claims

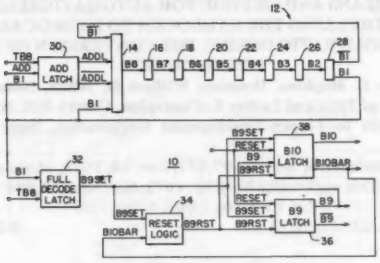


A slide rule has a rule face provided with a number of scales, a reglet whose face is provided with compartment scales for normal slide rule operation, and a cursor or slide is shiftable over the body of the rule and carries an index line for cooperation with the scales of the face. Along one longitudinal side of the body of the rule, a beveled face or trapezoidal flange carries a decimally divided scale which indicates units of length and simultaneously serves, by co-operation with the cursor, to indicate the mantissa of the logarithm of a number indicated on a logarithmically divided scale of the face of the slide rule.

3,733,471
RECIRCULATING COUNTER

Robert C. Gilberg, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Dec. 7, 1971, Ser. No. 205,546
Int. Cl. H03k *21/36, 23/02*
U.S. Cl. 235—92 NG 7 Claims

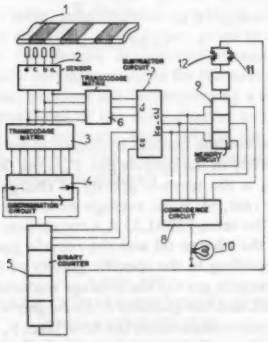


A four phase MOS-LSI dynamic recirculating binary counter which operates in an N bit time cycle and which counts in excess of 2^N-1 counts is disclosed. The counter includes an N stage shift register counter and output logic. The output logic includes a latch which is set once each time cycle during a given bit time and reset by the first logic 0 signal from the shift register counter. If during the given bit time of the next cycle the latch is still set and the least significant shift register stage signal is logic 1, a signal is provided to set additional latch circuits which act as additional stages of the binary counter.

3,733,472
APPARATUS FOR THE AUTOMATIC DETECTION OF COUNTING ERRORS IN A DISPLACEMENT MEASURING SYSTEM BY ENCODING AND COUNTING

Jean Taisne, Fontenay sous Bois, France, assignor to Societe D'Optique Precision, Electronique Et Mecanique Sopelem, Paris, France

Filed Jan. 28, 1972, Ser. No. 221,710
Int. Cl. H03k *21/30*
U.S. Cl. 235—92 DN 9 Claims

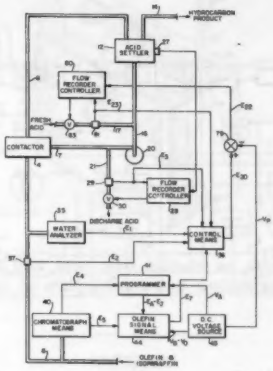


Counting errors are automatically detected in a displacement measuring system using encoding and counting by sensing a value C_L and substracting it from a value C_E registered by a counter. The difference of the values is memorized at the beginning of measurement and is then continuously compared with the memorized difference. Non-coincidence between the instantaneous difference and the memorized difference actuates an alarm.

3,733,473
MEANS AND METHOD FOR CONTROLLING THE STRENGTH OF ACID IN AN ALKYLATION UNIT

Edward T. Child, Montebello, Calif.; John E. May, Port Arthur, Tex., and William D. Stepanek, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,385
Int. Cl. C07c *3/14*
U.S. Cl. 235—151.12 4 Claims



The strength of acid in an alkylation unit is controlled by a system using a signal corresponding to the anticipated demand on the acid by the reaction of olefin and isoparaffin in the presence of the acid. The reaction weakens the acid so that it is necessary to replace some of the weakened acid with fresh acid to maintain a desired acid strength. The control system includes apparatus sampling the olefin and isoparaffin entering the alkylation unit which provides a signal corresponding to the percent volume of acid degrading constituents formed during alkylation. A water analyzer samples the olefin and isoparaffin and provides a signal corresponding to their water content. Signals corresponding to sensed flow rates of fresh and discharged acid entering and leaving, respectively, the alkylation unit and of the olefin and isoparaffin are provided by sensors. A control circuit using analog computers develop the control signal in accordance with the signals from the sensors, the volume signal and the signal from the analyzer and equations hereinafter disclosed. The control signal is applied to a flow recorder controller which controls the flow rate of the fresh acid entering the alkylation unit so as to maintain the desired acid strength.

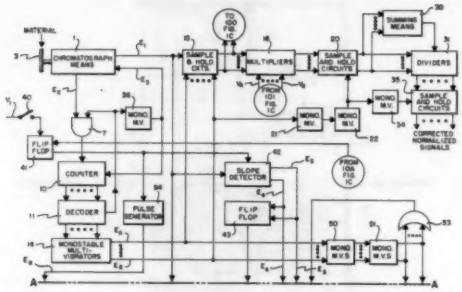
3,733,474
APPARATUS AND METHOD FOR PROVIDING CORRECTED NORMALIZED SIGNALS CORRESPONDING TO THE COMPOSITION OF A MATERIAL

Richard R. Edwards, Groves; Walker L. Hopkins, Houston; Leland A. Chvatal, Port Arthur, and Thomas R. Cooper, Groves, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 1, 1971, Ser. No. 177,028
Int. Cl. G01n *31/08*; G06g *7/48*
U.S. Cl. 235—151.35 8 Claims

The apparatus includes a chromatograph which samples material and provides a first signal, having peaks corresponding to different constituents of the material, and a pulse signal. Each pulse in the pulse signal coincides with a different peak amplitude occuring in the first signal. In accordance with the signals from the chromatograph, one circuit determines the area under the curve, the curve being the first signal, for each peak in the first signal. Another circuit determines a different baseline for each peak and the area under each baseline. A

third circuit receiving signals from the first two circuits effectively subtracts each baseline area fro a peak from the area under the curve associated with the peak to determine a peak area for each peak. The peak area signals are multiplied by thermal conductivity factors to provide signals corresponding to the concentration of the components of the material. A programmer responsive to the pulse signal from the chromatograph controls sample and hold circuits receiving the first



signal from the chromatograph to provide peak height voltages. The peak height voltage for each peak is divided into a corresponding percent concentration signal to provide a correction signal. The correction signals are multiplied with the peak height voltages to provide corrected signals corresponding to the concentrations of the components of the material. The corrected signals are normalized by summing the corrected signals and dividing each corrected signal by the resulting sum signal.

3,733,475

DIGITAL PULSE SEQUENCE DIVIDER

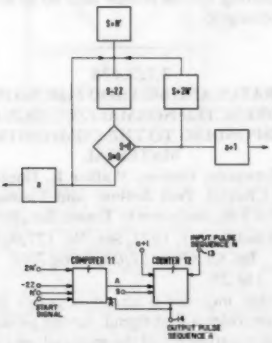
Jochen Haeusler, Nurnberg-Laufamholz, and Wolfgang Wagnerberger, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 10, 1970, Ser. No. 88,351

Claims priority, application Germany, Nov. 22, 1969, P 19 58 622.0

Int. Cl. G06f 7/52; H03k 29/00

U.S. Cl. 235—156 **6 Claims**



A computer determines the pulse intervals of an output pulse sequence which lead to optimization between two pulses of the output pulse sequence. The computer adds, subtracts and compares integral numbers and determines the pulse intervals in order to prepare the next pulse of the output pulse sequence. The computer avoids division, so that it provides a result which is free of round-off errors. A counter responds to the pulses of the input pulse sequence and releases pulses of the output pulse sequence under the control of the computer, in accordance with a or $a + 1$ pulses of the input pulse sequence.

3,733,476

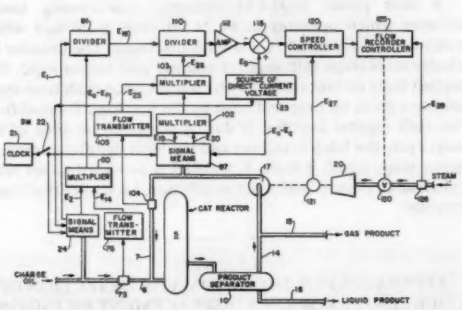
MEANS AND METHOD FOR AUTOMATICALLY CONTROLLING THE HYDROGEN TO HYDROCARBON MOLE RATIO DURING THE CONVERSION OF A HYDROCARBON

Walker L. Hopkins, Houston; William D. White, Nederland, both of Tex., and Luther F. Champion, Cherry Hill, N.J., assignors to Texaco Development Corporation, New York, N.Y.

Continuation of Ser. No. 97,571, Dec. 14, 1970, abandoned. This application May 30, 1972, Ser. No. 257,644

Int. Cl. C10g 35/04; G06g 7/58

U.S. Cl. 235—151.12 **8 Claims**



In a hydrocarbon converting unit in a petroleum refinery, the hydrogen to hydrocarbon mole ratio is controlled in accordance with the following equation:

$$H_2/HC = \frac{V_H G_g F_g}{13261.21 \times \frac{G_c F_c}{M_c}}$$

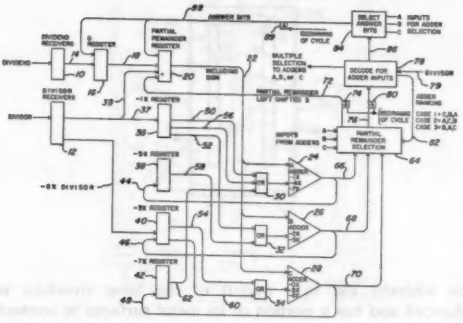
where V_H is the volume percent hydrogen in recycle gas, G_g is the specific gravity of the recycle gas, F_g is the flow rate of the recycle gas, G_c is the specific gravity of charge oil, F_c is the charge oil flow rate, M_c is the average molecular weight of the charge oil and the term 13261.21 is a conversion factor. Signal means sample the charge oil and the recycle gas and provide signals corresponding to the specific gravity of the charge oil G_c and of the recycle gas G_g, the average molecular weight M_c of the charge oil and the quantity of hydrogen V_H in the recycle gas. Flow transmitters sense the flow rates F_c and F_g of the charge oil and the recycle gas, respectively, and provide corresponding signals. An analog computer computes the hydrogen to hydrocarbon mole ratio in accordance with the aforementioned equation and the signals from the signal means and the flow transmitters and provides an output corresponding thereto. An error signal is developed using an output from the analog computer and a reference signal corresponding to a desired value for the hydrogen to hydrocarbon mole ratio. The error signal is used to control the hydrogen entering the hydrocarbon converting unit so as to maintain the hydrogen to hydrocarbon mole ratio at the desired value.

3,733,477

ITERATIVE BINARY DIVIDER UTILIZING MULTIPLES OF THE DIVISOR

Donald P. Tate, St. Paul, and Louis Kent Steiner, Minneapolis, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 4, 1972, Ser. No. 223,559
Int. Cl. G06f 7/52
U.S. Cl. 235—164 6 Claims



A high speed divider is provided for a digital computer for generating a predetermined number of partial quotient bits per iteration by initially using a decode table implemented by a logic network to examine a predetermined number of high order bits of the divisor and another predetermined number of high order bits of the dividend, on the first iteration, and on successive iterations, of the partial remainder. The decode table is generated using the principle that for a given range of the divisor and dividend, as established by fixing the high order digits thereof, a limited range of possible partial quotients exists. The number of difference networks required to form partial remainders is limited to the number of decoded possible values for the partial quotient to be generated. A number of trial possible partial remainders are generated by the difference networks using the multiples of the divisor equal to the decoded possible partial quotient values. A second decode table, implemented by a logic network, determines, from the multiples of the divisor gated to the difference networks, and the results determined therein, which has produced the new partial remainder for the next iteration. The bits of the partial quotient are determined by a selector which examines the multiples of the divisor gated to the difference networks and the network from which the new partial remainder was derived. The process of iteration continues until the entire quotient is generated.

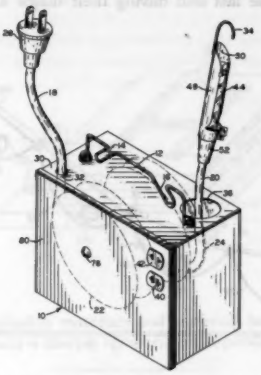
3,733,478

TRANSPORTABLE CONTAINER FOR ELECTRIC CORDS AND CONNECTORS

James D. Barker, R. D. No. 1, Kittaning, Pa.

Filed June 14, 1971, Ser. No. 152,567
Int. Cl. F21v 15/22
U.S. Cl. 240—2 R 5 Claims

A portable power box has a handle and internal oppositely wound reels, with extension cords one on each of a respective reel, the box also includes an outlet receptacle. The two reels are electrically connected by means of a plurality of sets of copper points and the reels are proportioned to accommodate the desired size and length of electrical cord. The portable box includes a trouble light on one cord and a plug on the other cord and means are provided on the handle to receive and clamp the respective cords at the desired pulled out lengths.



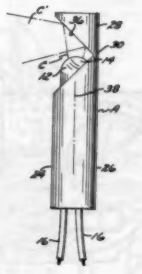
The power box may also include an attachment clip whereby it can be easily mounted as a whole for convenient carrying.

3,733,479

END LAMP ACCESSORY

James A. Carley, Rolling Hills, Calif., assignor to Los Angeles Miniature Products, Inc., Torrance, Calif.

Filed Sept. 23, 1971, Ser. No. 182,951
Int. Cl. F21v 33/00
U.S. Cl. 240—2 R 10 Claims



An accessory for use with an electrically operated end lamp, with the accessory when so used acting as a heat sink, a protective housing for the lamp, and as a means for reflecting a beam from the lamp at a desired angle, as well as varying the optical characteristics of the reflected beam from those of the beam initially emitted by the lamp.

3,733,480

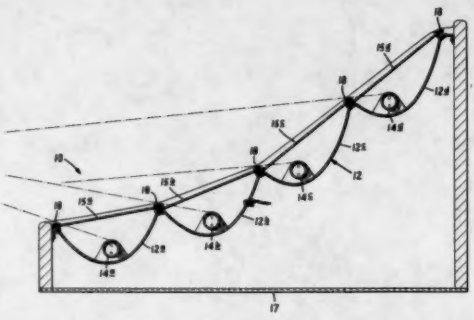
STUDIO LIGHTING APPARATUS

William E. Glenn, Jr., Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 24, 1971, Ser. No. 156,436
Int. Cl. F21v 9/00
U.S. Cl. 240—20 6 Claims

Apparatus for illuminating a background surface of a television studio or stage with white light comprising red, blue and green color components that are matched with the corresponding primary color sensitivity curves in a color televi-

sion or film camera. The apparatus comprises an assembly of reflectors of elliptical shape supported in contiguous side-by-side relationship with successive reflectors positioned slightly higher than the last and having their major axes departing



from the vertical to a greater extent than the last. Each reflector is illuminated by an elongated fluorescent lamp mounted at the focus of the reflector and having a primary color-emitting phosphor.

3,733,481

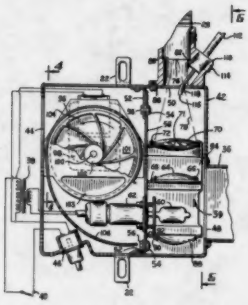
FIBER OPTICS LIGHT SOURCE

Frits Kuyt, Rochester, N.Y., assignor to Bausch & Tomb Incorporated, Rochester, N.Y.

Filed June 11, 1970, Ser. No. 45,367

Int. Cl. F21v *29/00*

U.S. Cl. 240—47 **1 Claim**



A fiber optics light source of compact, flat configuration comprises a narrow lamphouse including lamp, reflector and condenser aligned for focusing into the receiving end of a fiber optics bundle, and an air impeller mounted laterally of the lamphouse to direct air over the lamp for dissipating heat buildup. The light source may be built into a dental chair or the like, or it may be a separate module.

3,733,482

FLUORESCENT LUMINAIRE WITH VERTICALLY ORIENTED U-SHAPED LAMP

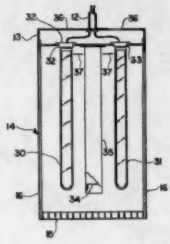
Jack V. Miller, Sierra Madre, and Ernest Monte, Pasadena, both of Calif., assignors to Sunbeam Lighting Co., Los Angeles, Calif.

Filed July 22, 1971, Ser. No. 165,256

Int. Cl. F21s *3/00*

U.S. Cl. 240—51.12 **17 Claims**

Disclosed is a novel luminaire structure employing a U-shaped fluorescent lamp mounted in a rectangular or cylindrical light diffuser in either an upstanding or depending position. The diffuser constitutes the radiating surface of the luminaire. The diffuser and lamp or lamps are supported from a base member which contains the electrical connections of the luminaire. The electrical ballast associated with the lamp or lamps is secured to the base in an elongated upstanding housing parallel to the leg portions of the lamp or lamps and positioned therebetween. The ballast housing has a reflective sur-



face whereby the light output of the lamp structure is enhanced and has a portion of its metal surfaces in contact with the ballast whereby heat is conducted away from the ballast and is dissipated by radiation from the housing.

Also disclosed is a combination of a vertically oriented U-shaped lamp plus enclosing diffusers of particular orientation which minimizes glare by limiting light distribution at the angle of 25° with respect to the nadir.

3,733,483

ELECTRON SPECTROSCOPY

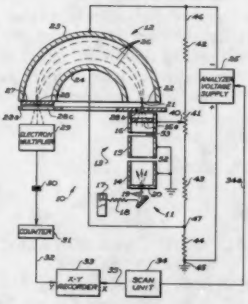
Brian Noel Green, Sale, and John Merza Watson, Manchester, both of England, assignors to Associated Electrical Industries Limited, London, England

Filed Feb. 26, 1971, Ser. No. 119,327

Claims priority, application Great Britain, Feb. 27, 1970, 9,638/70

Int. Cl. G01t *1/36*

U.S. Cl. 250—49.5 AE **8 Claims**



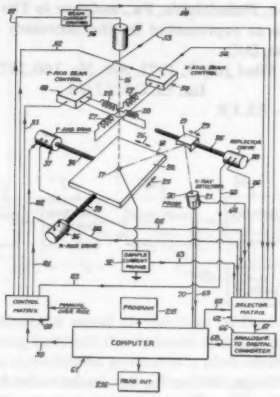
An electron spectroscopy apparatus has an analyzer and a retardation lens system. In a first mode of operation, no retardation is applied, and the analyzer scans a low-energy range of the energy spectrum. In a second mode, retardation is applied, and the analyzer scans a high-energy range. The retardation is varied in synchronism with the scanning of the analyzer, so as to maintain a constant retardation factor.

3,733,484

CONTROL FOR ELECTRON MICROPROBE

Michael A. Bayard, Chicago, Ill., assignor to Walter C. McCrone Associates, Inc., Chicago, Ill.

Filed Oct. 29, 1969, Ser. No. 872,061
Int. Cl. G01n 23/22
U.S. Cl. 250—49.5 PE 7 Claims



An electron microprobe has a holder for a sample to be analyzed. The holder is movable along an X-axis and a Y-axis, each at right angles to the electron beam directed at the sample. Drives, each including an electric motor, are operatively connected to the holder to adjust the position of the holder along the respective axis. There are also electron beam position controls for positioning the beam in a path oriented as desired with respect to the X and Y axes. An electron beam current control enables the quantity of electrons in the beam to be adjusted. A third drive includes an electric motor, and is connected to a reflector to position the reflector with respect to the X-rays emitted from the sample, and with respect to X-ray detectors. The controls and drives are connected to a control matrix through which signals are supplied to the respective controls and drives, as dictated by a computer. Each of the controls and drives produces an analogue feedback signal indicative of the setting thereof. These feedback signals are sent to a selector matrix from which a specific signal is selected, as dictated by the computer, with the selected signal being delivered to the computer through an analogue to digital converter. The X-ray detectors also produce signals which are ultimately delivered to the computer either directly or through the analogue to digital converter. By appropriately programming the computer, the apparatus automatically analyzes the sample for constituents as desired.

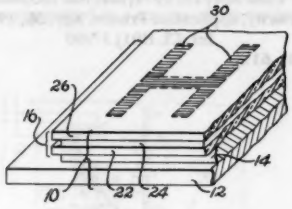
3,733,485

EXPOSURE METER FOR THERMAL IMAGING DEVICES

Joseph Gaynor, Arcadia, and Terry G. Anderson, Pasadena, both of Calif., assignors to Bell & Howell Company, Pasadena, Calif.

Filed Mar. 18, 1971, Ser. No. 125,684
Int. Cl. B41m 5/00
U.S. Cl. 250—65 T 12 Claims

An exposure meter to permit the determination of optimum thermal exposure of a document to be thermographically reproduced. A sheet of thermotropic material is assembled with the document and exposed to thermal radiation until a change in form is discerned corresponding to the document information. Exemplary thermotropic materials include cholesteric liquid crystalline material, thermochromic com-



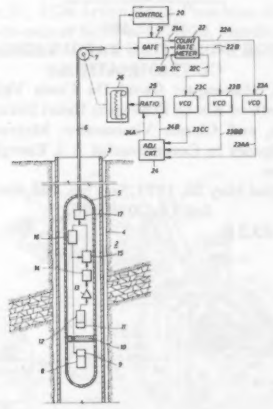
pounds, heat-fusible materials and materials having electrical resistance which is sharply temperature dependent.

3,733,486

RADIOLOGICAL WELL LOGGING METHODS AND APPARATUS FOR REDUCING THE EFFECT OF ACTIVATION FROM THE DETECTOR CRYSTAL

Dan McCay Arnold, and Robert William Pitts, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,743
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R 27 Claims

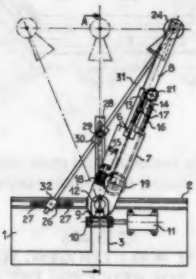


Improved radioactivity well logging methods and apparatus are provided for determining the macroscopic thermal neutron capture cross section of subsurface earth materials, wherein a correction is made to reduce or eliminate the effects of the portion of the measurement which is due to activation of the crystal in the detector. The high energy neutron source is pulsed at a preselected rate during the first portion of the operating cycle, and the resulting capture-induced radiation is measured within the first portion of the operating cycle during two preselected time intervals following the termination of each neutron burst. Thereafter, the source is inactivated during the balance of the operating cycle, and a measurement is made of the radiations registering in the activated crystal. This latter measurement is then utilized to correct the measurements obtained during the first portion of the operating cycle to a predetermined relationship.

3,733,487
X-RAY DIAGNOSTIC APPARATUS

Jean Claude Paul Louche, and Rene Loucheur, both of Paris, France, assignors to Compagnie Generale De Radiologie, France

Filed Apr. 13, 1971, Ser. No. 133,660
Claims priority, application France, Apr. 30, 1970, 7016007
Int. Cl. H01j *37/00*
U.S. Cl. 250—61.5 **4 Claims**

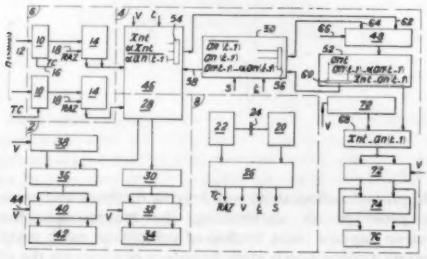


X-ray diagnostic apparatus, particularly adapted for rectilinear tomography, comprising a column carrying the X-ray source pivoting about a horizontal axis, said column being composed of a lower and an upper parts, the latter one longitudinally displaceable relatively the former one by means of an electric motor controlled by a signal, which is a function of the angle of inclination of the column.

3,733,488
DEVICE FOR INDICATING RAPID RADIOACTIVE CONTAMINATION

Andre Chaud, Manosque; David Da Costa Vieira; Georges Friedling, both of Aix en Provence; Henri Suzan, Saint Paul les Durance, and Claude Vieuxmaire, Meyrargues, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 20, 1971, Ser. No. 145,404
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R **5 Claims**

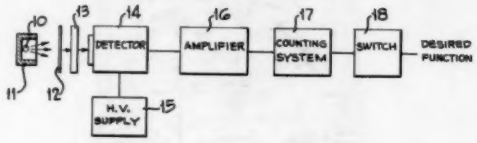


The difference in rates of variation in time of useful and spurious signals is employed in order to select the useful signals by means of *n* detection channels each comprising successively a radioactivity detector, a matching circuit and a scaler, at least one clock signal generator for delivering periodic pulses and a circuit for the distribution of clock signals, a direct measurement channel for recording and comparing the content of each scaler with a threshold value A′ in order to provide information when the content exceeds the threshold value, and a "difference" measurement channel which follows the progressive variation of radioactive contamination and comprises a scaler-selection circuit, means for providing a "filtered" value a_t of the content of each scaler, means for comparing the difference between each content and the corresponding "filtered" value with a threshold value A and threshold-overshoot information means.

3,733,489
RADIATION TIMING DEVICE

Sigmund Berk, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 7, 1971, Ser. No. 160,287
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R **9 Claims**

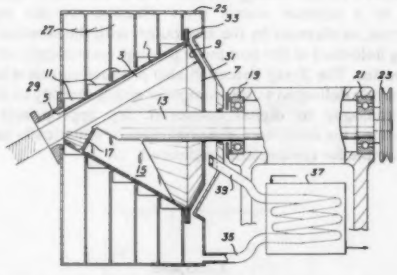


Radiation timing device for use in fuzes for bombs, shells, mines and the like. The constant emission of radioactive emanations from a radioactive source is used to measure time. The device consists of a source, a shutter or absorber placed between the source and a radiation detector and counter. When a predetermined number of emanations is counted a switch activates the device.

3,733,490
ROTARY TARGET FOR ELECTROSTATIC ACCELERATOR WHICH OPERATES AS A NEUTRON GENERATOR

Michel Roche, Quetigny, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 8, 1971, Ser. No. 104,951
Int. Cl. G21g *3/00*
U.S. Cl. 250—84.5 **5 Claims**

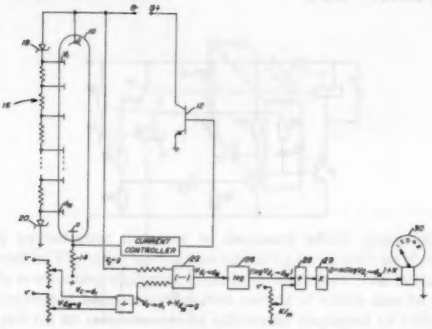


The rotary target has a generally annular shape and is carried by a rotor into which the beam of the accelerator penetrates, a stator being placed around said rotor and forming an end-shield behind the target. Heat-transporting fluid is circulated within the space formed between the end-shield and the target as a result of rotation of the rotor which acts on the fluid in the same manner as a pump. A heat exchanger is placed on the path of the heat-transporting fluid and at least one system of baffles is placed between the rotor and the stator.

3,733,491
PHOTOMULTIPLIER TUBE CIRCUIT

Frank H. Holland, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1971, Ser. No. 165,595
Int. Cl. H01j 39/12
U.S. Cl. 250—207 5 Claims

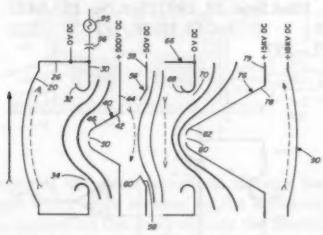


A voltage difference equal to the sum of the voltage differences appearing between the cathode and first dynode, and between the last dynode and ground of a photomultiplier tube is subtracted from the cathode-to-ground voltage difference of a photomultiplier tube. Optical density is calculated by producing the logarithm of the quotient signal so produced.

3,733,492
GATEABLE IMAGE INTENSIFIER TUBE

Robert A. Hagar, Fairfield, Conn., assignor to The Machlett Laboratories, Incorporated, Springfield, Conn.

Filed Apr. 3, 1972, Ser. No. 250,411
Int. Cl. H01j 31/50, 39/12
U.S. Cl. 250—213 VT 7 Claims



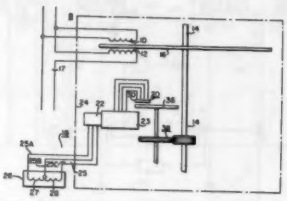
An image intensifier tube comprising an elongated envelope having therein axially spaced electrodes including a gateable photocathode located adjacent an input faceplate at one end of the envelope and low voltage means for increasing the intensity of an electrostatic field adjacent the photocathode without adversely affecting other interelectrode fields established within the tube envelope, thereby achieving an in-focus image having substantially constant brightness during the gating interval.

3,733,493
SOLID STATE RADIOMETRIC PULSE INITIATOR FOR REMOTE METER READING SYSTEMS

Theodore M. McClelland, III, Cary, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1971, Ser. No. 198,319
Int. Cl. G01d 5/36
U.S. Cl. 250—233 7 Claims

A solid state radiometric pulse initiator for a remote meter reading system includes a sensing head having two combined source-pickup pairs mounted in a meter for initiating pulses in response to movement of a pattern disc. The source-pickup pairs control an output pulse generator to produce pulses over a three wire telemetering circuit. Each source-pickup pair includes a solid state radiation emitter and a cooperatively arranged radiation responsive solid state switch. The source-pickup pairs are connected to a source of alternating current

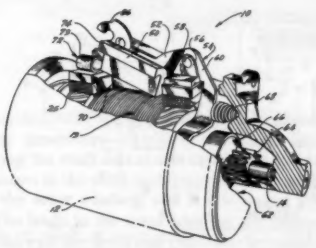


so as to be alternately energized in an out-of-phase relationship to prevent false triggering due to cross-radiation between the pairs. A radiation filter is provided on a sensing head carrying the source-pickup pairs so as to concurrently increase the triggering sensitivity of the source-pickup pairs and permit operation with reduced current levels when the pulse initiator is operated under strong ambient light conditions typical in certain meter applications.

3,733,494
REPLACEMENT COIL SET FOR AUTOMOBILE STARTER MOTORS

Henry P. Erwin, Jr., 1224 Arden Road, Pasadena, Calif.

Continuation-in-part of Ser. No. 127,928, March 28, 1971. This application May 15, 1972, Ser. No. 253,396
Int. Cl. F02n 11/00
U.S. Cl. 290—38 4 Claims



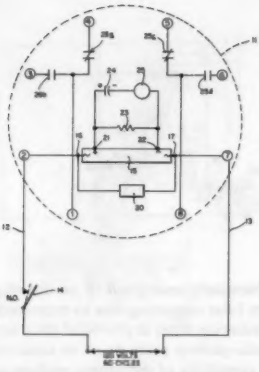
An improved replacement field coil set is provided for automobile starter motors of the movable pole type having four field coils of which one coil serves as a pull-in and hold-in coil for the movable pole-piece in addition to serving as a field coil for inducing rotation of the motor armature. In the improved coil set, the one coil is comprised of a single winding formed by a single conductor of predetermined turns and dimensions so selected that the one coil operates to pull the movable pole-piece into the center of the coil during initial current flow only through the single winding and also during current flow through all coils to hold the movable pole-piece in its pulled-in position without chatter of the movable pole-piece during no-load operating conditions of the motor. The four coils of the improved coil set are interconnected in a two-and-two series-parallel relation to each other so that, upon installation of the coil set in a starter motor, the conductors interconnecting the coils of the set are all disposed at a common end of the motor.

3,733,495

ELECTRICAL CONTROL UNIT

George S. Hudimac, Jr., Allentown, Pa., assignor to Mechanical Service Co., Inc., Allentown, Pa.

Filed June 12, 1972, Ser. No. 261,706
Int. Cl. H03k 3/00
U.S. Cl. 307—108 4 Claims



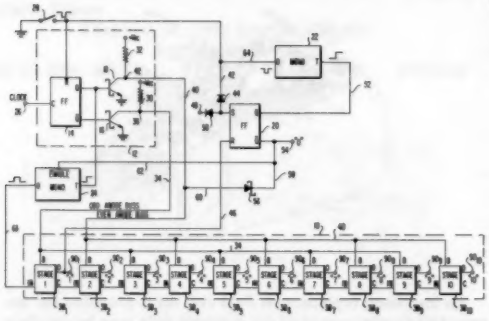
A device, preferably of the plug-in type, which is connected in an electrical master circuit and operates when the master circuit is energized to momentarily open and/or close a contact in an independent slave circuit and thereby perform a control function. The operation is momentary even though the master circuit is maintained in the energized condition.

3,733,496

VARIABLE MODULO N SCS TYPE COUNTER

Peter A. Schade, 10650 Weymouth St., Bethesda, Md.

Filed Feb. 22, 1972, Ser. No. 227,754
Int. Cl. H03k 23/08; G11c 19/00
U.S. Cl. 307—223 B 11 Claims



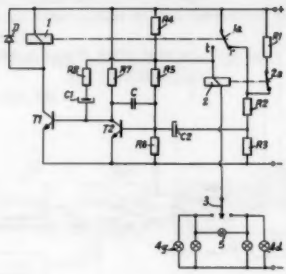
An N stage counter-divider comprising a plurality of series coupled semiconductor SCS type switches wherein the switch of each stage is comprised of two complementary transistors, one of which comprises a Schottky transistor, interconnected in the form of a four terminal device having an anode, a cathode, and a pair of gate electrodes referred to as the anode gate and the cathode gate. The anodes of the odd and even numbered stages are respectively connected together in parallel relationship and share a respective common load resistor. A flip-flop circuit controlled by a clock input signal has a pair of complementary outputs which are respectively coupled to the common load resistors through logic inverter circuits and thereby alternately apply a supply voltage to the odd and even numbered SCS anodes as the flip-flop is clocked.

3,733,497

ELECTRONIC FLASHER

Bertrand A. Warnod, Neuilly-sur-Seine, France, assignor to Klaxon S.A., Neuilly-sur-Seine, France

Filed Dec. 2, 1971, Ser. No. 204,231
Claims priority, application France, Dec. 4, 1970, 7043695
Int. Cl. H01h 47/00
U.S. Cl. 307—132 E 4 Claims



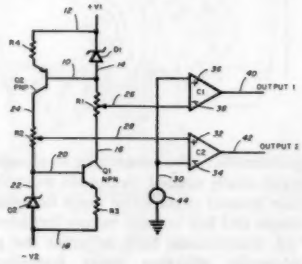
A circuit for respectively flashing signal lamps. The circuit includes at least two cooperable transistors, charging circuit with a main capacitor, a secondary capacitor to ensure stable operation, a main relay, a secondary relay, and a direct current source. The circuit is designed to be insensitive to transistor current gain variations and to be immune to parasitic capacitances.

3,733,498

DUAL-VOLTAGE FEEDBACK COMPARATOR FOR SIMULTANEOUSLY MONITORING A POSITIVE AND NEGATIVE VOLTAGE

Milton R. Watson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Sept. 27, 1971, Ser. No. 183,847
Int. Cl. H03k 1/12
U.S. Cl. 307—297 4 Claims

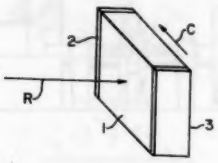


In this invention a positive voltage V1 and a negative voltage V2 are simultaneously monitored by two voltage comparators, which compare voltages on two potentiometers with a standard reference voltage. The potentiometers are tied between constant current loops, each comprising a zener diode, a resistance, and a transistor. When either of the voltages changes the collector of the appropriate transistor takes up the voltage, and thus the potentiometers shift in their potential in accordance with the change of the monitored voltages. These changes in potential are transferred to the comparators which switch their output from a logical zero to a logical one whenever the voltages they are monitoring vary by more than a selected value from a preselected value.

3,733,499
PYROELECTRIC DETECTOR

Daniel W. Deis, Pittsburgh, and George W. Roland, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1972, Ser. No. 246,008
Int. Cl. H01l *15/00*
U.S. Cl. 310—4 **10 Claims**

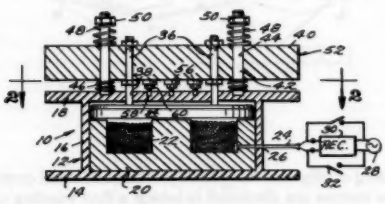


A pyroelectric detector is disclosed which comprises a crystal of Tl_3AsSe_3 having two opposing faces with an electrically conducting electrode contacting each face. The detector is connected to an amplifier, the output of which can be displayed on an oscilloscope or otherwise displayed or utilized electronically. The detector has superior electrical properties and can detect any form of radiation which increases the temperature of the crystal.

3,733,500
ADJUSTABLE ELECTROMAGNETIC VIBRATOR

George W. Mushrush, 12903 Sturbridge Road, Woodbridge, Va.

Filed Mar. 1, 1972, Ser. No. 230,643
Int. Cl. H02k *33/02*
U.S. Cl. 310—17 **3 Claims**



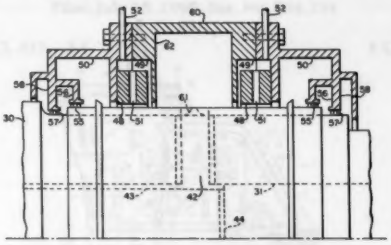
The housing of the electromagnetic vibrator has an outer plate through which studs secured on the armature protrude. A weight is secured on the studs outside the housing. Further studs secured on the plate outside the housing mount the armature/weight assembly on the housing via counter-balancing springs. Nuts secured on the latter studs are adjustable to adjust vibration amplitude. Resilient bumpers may be provided to limit movement of the armature toward the core and coil and to limit movement of the weight toward the housing. The vibrator may use AC electric service, as is, or rectified to DC. The adjustable nuts also accommodate switching from AC to DC electrical service.

3,733,501
SEALING MEANS FOR LIQUID COOLED ROTORS FOR DYNAMOELECTRIC MACHINES

Paul R. Heller, Murrysville, Pa., and Ram T. Gehani, Bombay, India, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 17, 1971, Ser. No. 181,479
Int. Cl. H02k *9/00*
U.S. Cl. 310—54 **12 Claims**

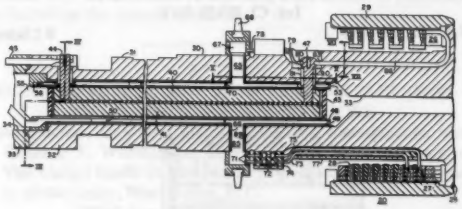
Gland seals are provided for the entrance and discharge passages of liquid cooled rotors for dynamoelectric machines. Coolant liquid is introduced or discharged through stationary coolant chambers surrounding the rotor and enclosing the entrance and discharge passages. Gland seal rings encircle the rotor adjacent the coolant chambers and sealing liquid is introduced into the clearance between each seal ring and the rotor at a pressure not exceeding the pressure of the coolant liquid to minimize leakage of the coolant liquid while preventing contamination of the coolant liquid by the sealing liquid.



3,733,502
LIQUID COOLED ROTOR FOR DYNAMOELECTRIC MACHINES

L. Paul Curtis, Murrysville; Sui-Chun Ying, and James E. Luzader, both of Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1971, Ser. No. 144,050
Int. Cl. H02k *9/00*
U.S. Cl. 310—61 **15 Claims**



A liquid cooled rotor for dynamoelectric machines such as large turbine generators in which a coolant liquid is introduced along the shaft axis at one end of the machine, flows through passages in the shaft and rotor body, through passages or ducts in the rotor winding, and is discharged through the shaft axis. The leads to the rotor winding are disposed axially in a center bore of the shaft and provision is made for directing the coolant from the shaft axis to an annular passage around the axial leads to cool the leads as well as to carry the coolant to the central or body part of the rotor. Provisions are also made for liquid cooling of the radial leads to the rotor winding, and corrosion resistant linings are utilized in the coolant passages with provision for permitting thermal expansion of the linings.

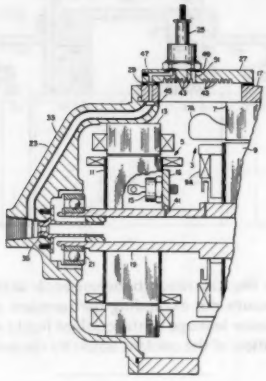
3,733,503
OIL SPRAY COOLED, BRUSHLESS, VARIABLE SPEED DIRECT CURRENT GENERATOR

Frederick Milton Potter, Little Silver, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed June 16, 1972, Ser. No. 263,504
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 **11 Claims**

An oil cooled generator has a plurality of diodes for converting alternating current power to direct current power. The

diodes are mounted on heat sinks exteriorly of the generator so the diodes can be assembled to and disassembled from the generator without dismantling the generator. The heat sinks are cooled by spraying oil on finned surfaces of the heat sinks



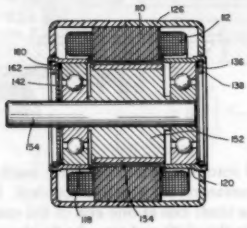
inside the generator and by circulating cooling oil at turbulent velocity between the diodes and heat sinks over major portions of the diode mounting surfaces for directly cooling the diodes and heat sinks.

3,733,504

SELF SUPPORTING ROTARY ELECTRICAL DEVICE

Jack R. Dennis, West Chester, Pa., assignor to Harowe Servo Controls, Inc., West Chester, Pa.

Filed July 27, 1971, Ser. No. 166,513
Int. Cl. H02k *5/10*
U.S. Cl. 310—86 **8 Claims**



A magnetic sleeve is disposed in the space between the stator and the rotor of a hysteresis synchronous motor. The sleeve supports the stator and closes internal slots in the stator core. The sleeve also carries bearings for mounting the rotor for relative movement with respect to the stator.

3,733,505

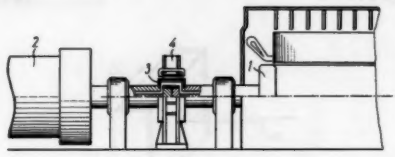
INDUCTION TRANSDUCER OF THE EXCITATION CURRENT OF A SYNCHRONOUS GENERATOR

Vasily Semenovich Kildishev, Plekhanovskaya ulitsa, 41/43, kv. 55, Kharkov; Gely Alexeevich Kovalkov, Leningradsky prospekt, 26, kv. 174; Nikolai Sergeevich Maznikin, B. Pochtovaya ulitsa, 14/16, kv. 61, and Alexandr Vasilievich Misjulin, Vyazemskaya ulitsa, 24, kv. 23, all of Moscow, U.S.S.R.

Filed Feb. 8, 1971, Ser. No. 113,290
Int. Cl. H02k *7/20, 17/44*
U.S. Cl. 310—112 **3 Claims**

The present invention relates to an induction transducer of the excitation current of a synchronous generator.

An induction current transducer according to the invention is characterized in that its rotor uses a coupling interconnecting the shafts of a synchronous generator and an exciter and carrying the field winding of the transducer, which uses the



conductors from the exciter to the synchronous generator, enclosed by a stator.

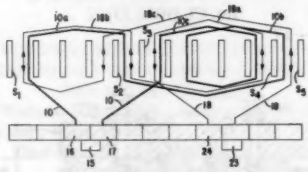
The current transducer is intended for use mainly on high-power turbo-alternators with brushless excitation.

3,733,506

COMMUTATED WOUND ARMATURE ASSEMBLIES

Wolfgang Jaffe, Roselle Park, and John W. Wurst, Dover, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,934
Int. Cl. H02k *3/16*
U.S. Cl. 310—198 **4 Claims**



Winding configurations for the armature of small commutator type motors are disclosed in which a first winding can be identified as just completing commutation at one brush at the same time that a second winding is in the midst of being short circuited by the other brush. The windings are distributed and arranged to be closely coupled to each other by having coil sides of each winding in slots common to both. In this manner, the abrupt current change required by the commutation process can be compensated for by an opposite change in current in the coupled short-circuited winding and with a minimum instantaneous flux change. This results in significantly reduced sparking, longer brush and commutator life and reduced electromagnetic interference (EMI).

3,733,507

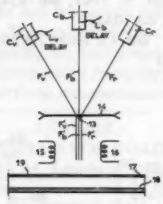
BEAM-DEFLECTION SYSTEM FOR COLOR TELEVISION PICTURE TUBE

Georges Casset, Issy-les-Moulineaux; Jean Pierre Driffort, Chatenay-Malabry, and Pierre Lebel, Kremlin-Bicetre, all of France, assignors to Ste dite France-Couleur, Paris, France

Filed Sept. 10, 1969, Ser. No. 857,638
Claims priority, application France, Sept. 16, 1968, 68166360
Int. Cl. H01j *31/20, 29/06*; **H01f** *7/00*
U.S. Cl. 313—70 C **7 Claims**

A color television picture tube, having a plurality of electron guns delivering electron beams and a deflection device

for causing the television screen to be swept by said beams, comprises means for supplying parallel and coplanar electron beams at their entrance into the deflection device and means imposing a delay on the video signals controlling two of the



guns so that the three elements of a triad of elementary colors of the screen receive quantities of electrons according to the video information corresponding to one and the same televised dot.

3,733,508

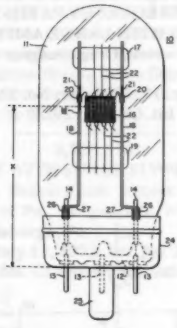
HALOGEN-CYCLE INCANDESCENT LAMP HAVING AN IMPROVED FILAMENT MOUNT ASSEMBLY

Nicholas J. Rainone, Clifton, and Aristide R. De Caro, Edison, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1970, Ser. No. 100,665

Int. Cl. H01j *1/94, 19/48*

U.S. Cl. 313—183 **6 Claims**



The planar tungsten-wire filament of a single-ended halogen type incandescent lamp is suspended at a predetermined location within the envelope by a unitary mount structure that is preassembled and has support wires that are coupled to the inner ends of the lead-in wires. The aforesaid coupling is achieved by providing helically coiled end portions on the tungsten support wires, slidingly fitting the coiled end portions over the tungsten inner end segments of the lead wires, and locking the members in predetermined telescoped relationship by hot-clamping the coiled portions to the leads, or by spot-welding molybdenum stud wires to the protruding inner ends of the lead wires. The axial adjustability afforded by the telescoped juncture permits standard mount assemblies to be used for lamp types which require different light-center-lengths. The numerous and unreliable tungsten-to-tungsten welds heretofore required are also eliminated.

3,733,509

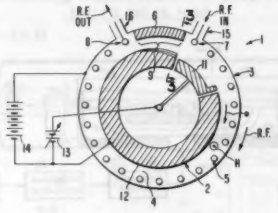
CROSSED-FIELD MICROWAVE TUBES HAVING AN IMPROVED CONTROL ELECTRODE GEOMETRY

Andrew S. Wilczek, Old Bridge, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed July 15, 1969, Ser. No. 844,731

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.6 **6 Claims**



An improved control electrode geometry for crossed-field microwave tubes is disclosed. The control electrode geometry is disposed facing the microwave slow wave circuit and includes an upstream portion which is recessed from the anode microwave circuit by more than the downstream portion of the control electrode. With a certain positive bias potential applied to the control electrode relative to the cathode potential a certain fraction of the electron stream will be collected on the control electrode in the absence of microwave energy on the microwave circuit, but in the presence of microwave energy on the microwave circuit the microwave energy interacts with the electrons to decrease the fraction of electrons collected on the control electrode.

3,733,510

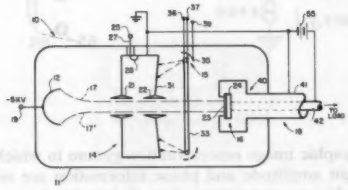
ELECTRON DISCHARGE DEVICES USING ELECTRON-BOMBARDED SEMICONDUCTORS

Paul Fischer, Oakhurst; Park Richmond, Farmingdale, and Gunther E. Wurthmann, Lincroft, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 17, 1971, Ser. No. 172,456

Int. Cl. H01j *25/22*

U.S. Cl. 315—5.24 **13 Claims**



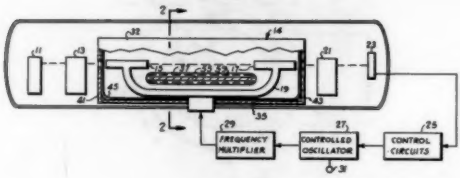
Amplifying and oscillating devices wherein an element beam from an appropriate electron gun is directed through an apertured microwave cavity resonator means and bombards a coaxially mounted semiconductor p-n junction.

In the case of an amplifier, an input r-f signal is coupled into the cavity resonator and modulates the electron beam. In the case of an oscillator, a pair of closely coupled microwave cavities is used to achieve the feedback essential to oscillation. In either case, a microwave cavity resonator means can be tuned mechanically or thermally.

3,733,511
MOLECULAR BEAM TUBE HAVING MEANS FOR DEGAUSSING THE MAGNETIC SHIELDING STRUCTURE

Leonard S. Cutler, Los Altos Hills, and Joseph H. Holloway, Saratoga, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 26, 1971, Ser. No. 137,455
Int. Cl. G01n *27/28*; H01s *1/00*
U.S. Cl. 315—8 **9 Claims**

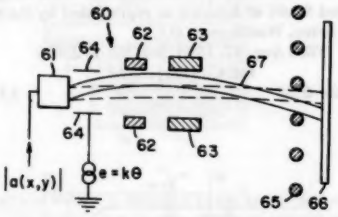


The polarizing magnetic field structure of a molecular beam tube is degaussed during operation of the tube by a circuit including a solenoid coil coupled to a very low frequency, square wave, exponentially-decaying, current source.

3,733,512
HOLOGRAM REPRODUCTION SYSTEM USING AN OPTICAL GRATING

Albert Macovski, Palo Alto, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Division of Ser. No. 889,392, Dec. 31, 1969, Pat. No. 3,641,264. This application July 19, 1971, Ser. No. 164,142
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 **4 Claims**

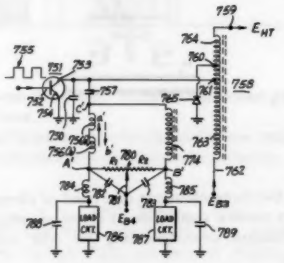


A holographic image reconstruction system in which holographic light amplitude and phase information are resolved spearately for reconstruction of the original hologram. The amplitude component is separately detected and reproduced on a cathode ray tube or other electronically addressable optical display. The image of the amplitude component is projected through an external optical grating onto a film for recording or onto a real time imgaing system. Phase information from the holographic data is separately detected and superimposed on the amplitude data by varying the phase of the shadow image of the optical grating on the amplitude image. Phase moduflation of the image of the grating is accomplished by modulating the aperture or angle of the lens which images the amplitude pattern through the grating onto the film, or by modulating the grating itself.

3,733,513
CIRCUITS FOR CENTERING PICTURES ON TELEVISION SCREENS

Sadayoshi Yoshikawa, and Hiroshi Kawamura, both of Osaka, Japan, assignors to Hunt Electronics Company, Dallas, Tex.

Filed Apr. 10, 1970, Ser. No. 27,391
Claims priority, application Japan, Apr. 30, 1969, 44/33955; Apr. 30, 1969, 44/33956; Apr. 30, 1969, 44/33957; Aug. 26, 1969, 44/67365; Sept. 5, 1969, 44/70343; Sept. 5, 1969, 44/70344; Sept. 5, 1969, 44/70345
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **43 Claims**

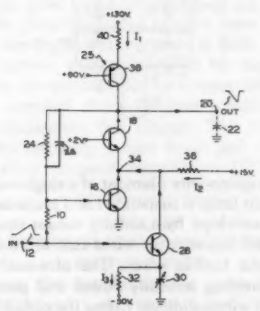


A variety of circuits for centering pictures on the screens of television tubes are characterized by the use of a picture centering variable resistor arranged in a loop including the horizontal and/or vertical deflection coils on said tubes. The variable resistor is connected by a brush or slidable contact with a source of direct current the magnitude and direction of which through the deflection coils controls the positioning of the associated picture. In connection with certain of the aforegoing circuits, provision is also made for high voltage stabilization.

3,733,514
WIDE BAND AMPLIFIER HAVING TWO SEPARATE HIGH AND LOW FREQUENCY PATHS FOR DRIVING CAPACITIVE LOAD WITH LARGE AMPLITUDE SIGNAL

Valdis E. Garuts, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 19, 1971, Ser. No. 126,083
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **15 Claims**



A wide frequency bandwidth amplifier circuit for driving an output load capacitance with large amplitude signals is described in which two separate paths are provided for low frequency and high frequency portions of such signal. The low frequency path is provided by a shunt feedback amplifier connected as an operational amplifier, while the high frequency path is formed by a series feedback amplifier. The gain of the

series feedback amplifier, determined by the ratio of its series feedback capacitance divided by the output load capacitance, is made equal to the gain of the operational amplifier, determined by the ratio of its shunt feedback resistance divided by its input coupling resistance. The low frequency cutoff of the high frequency path is above the high frequency cutoff of the low frequency path. Thus, in one embodiment of the amplifier circuit with a frequency response of D.C. to 200 megahertz, the high frequency path has a response of one megahertz to 200 megahertz and the low frequency path has a response of D.C. to 30 megahertz. This embodiment is used as a horizontal sweep amplifier for driving the horizontal deflection plates of a cathode ray oscilloscope with a ramp shaped output signal of 80 volts amplitude and three nanoseconds rise time.

3,733,515

LIGHTING SYSTEMS FOR ROAD VEHICLES

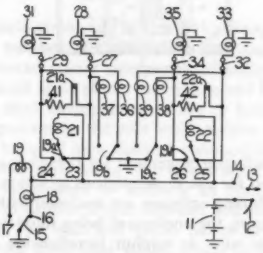
Eric Bernard Parkes, 25 Langleys Road, Selly Oak, Birmingham, England

Filed June 28, 1971, Ser. No. 157,449

Claims priority, application Great Britain, June 27, 1970, 31,286/70

Int. Cl. B60q *1/14*

U.S. Cl. 315—83 **1 Claim**



A vehicle lighting system has a dip switch which is connected to the vehicle battery through the vehicle lighting switch, and which operates a current sensing element. This current sensing element controls a changeover contact which in one position energizes the main beam filament and in the other position energizes the dip beam filament. The system incorporates devices for energizing an alternative headlamp if the selected headlamp filament fails.

3,733,516

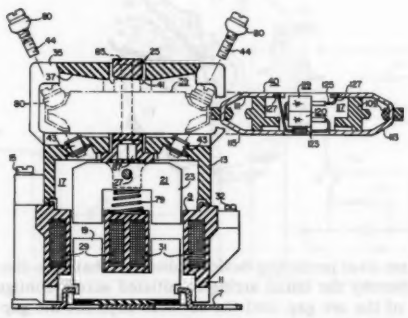
RELAY WITH SURGE SUPPRESSOR

Kurt A. Grunert, Beaver, and Robert W. Schaltenbrand, Glenshaw, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 11, 1972, Ser. No. 270,775

Int. Cl. H02h *1/04*, *9/04*

U.S. Cl. 317—16 **10 Claims**



A relay characterized by removable modular contact assemblies and a removable modular surge suppressor assembly which is substitutable for one of the modular contact assemblies, and the modular surge suppressor assembly comprising diode means electrically connected in parallel with an electromagnetic coil comprising an operating part of the relay.

3,733,517

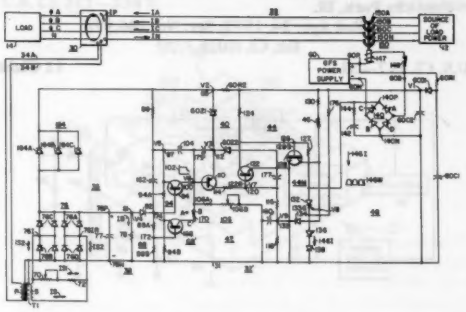
ELECTRICAL APPARATUS WITH GROUND FAULT DETECTOR AND INSTANTANEOUS TRIP CIRCUIT

John T. Wilson, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1971, Ser. No. 176,114

Int. Cl. H02h *3/30*

U.S. Cl. 317—18 D **5 Claims**



A ground fault sensor circuit adapted to be actuated to override a preset time delay for the actuation of a circuit interrupter in such a manner that a protective circuit breaker may be caused to open almost instantaneously in response to the sensing of a ground fault current rather than after a time delay.

3,733,518

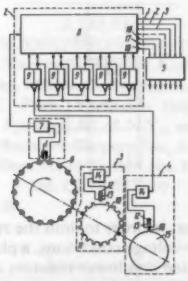
DEVICE FOR DETECTING FAULTS IN ROTARY ELECTRIC CIRCUITS OF BRUSHLESS EXCITERS OF SYNCHRONOUS MACHINES

Valentin Stepanovich Polulyakh, ulitsa II Pyatiletki, 19, kv. 118; Viktor Nikolaevich Khodkevich, ulitsa Frantisheka Krala, 35, kv. 8; Viktor Grigorievich Yakovenko, ulitsa Mira, 62, kv. 35, and Vasily Semenovich Kildishev, ulitsa Plekhanovskaya 41, kv. 55, all of Kharkov, U.S.S.R.

Filed Mar. 3, 1972, Ser. No. 231,671

Int. Cl. H02h *7/06*

U.S. Cl. 317—13 R **3 Claims**



The proposed device includes an induction pickup for checking the circuits under control mounted close to these rotary circuits conducting an electric current. The output of the induction pickup of the controllable circuits is connected to one of the inputs of a signal distributing unit made in the form

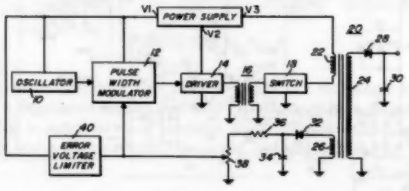
of a trigger counter whose outputs are connected to a diode matrix. Connected to the other input of the signal distributing unit is the output of an interrogation pulse shaping unit. The output of the signal distributing unit is connected to the inputs of a unit for controlling and indicating the condition of the circuits under control employed for light signalling about a fault and for sending signals to the system for automatic control and protection of the exciter and the synchronous machine excited thereby.

3,733,519

PROTECTION CIRCUIT FOR REGULATED POWER SUPPLIES

Donald E. Griffey, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 24, 1972, Ser. No. 246,978
Int. Cl. H02h *3/20*
U.S. Cl. 317—31 **11 Claims**



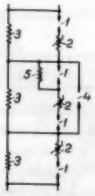
A protection circuit for regulated switching power supplies of the type employing a feedback circuit for adjusting the switching duty cycle to regulate the output thereof. A diode clamping circuit is provided within the feedback loop to prevent the error voltage developed by the feedback circuit from exceeding a predetermined level, thereby maintaining the switching duty cycle of the supply within a safe operating range during turn-on, turn-off, overload and other transient conditions.

3,733,520

MEANS FOR LIMITING THE RESIDUAL LEVEL DURING SUPERIMPOSED OVER-VOLTAGE CONDITIONS IN A SURGE DIVERTER

Asle Schei, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 28, 1972, Ser. No. 248,601
Claims priority, application Sweden, May 3, 1971, 5673/71
Int. Cl. H02h *1/00*
U.S. Cl. 317—61.5 **4 Claims**



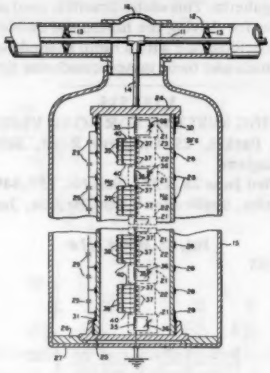
In a surge diverter, in order to limit the residual level during superimposed over-voltage conditions, a plurality of spark gap stacks with associated non-linear resistors are provided with a shunt spark gap shunting at least one spark gap stack with the associated non-linear resistor. A shunt impedance is provided shunting at least one spark gap stack which is shunted by the shunt spark gap. The surge diverter includes a sufficient number of shunt gaps to prevent the total voltage over the diverter upon super-imposed over-voltage conditions from exceeding the protection level of the diverter.

3,733,521

LIGHTNING ARRESTER

John W. Kalb, Medina, Ohio, assignor to The Ohio Brass Company, Mansfield, Ohio

Filed Sept. 27, 1971, Ser. No. 183,812
Int. Cl. H02h *9/06*
U.S. Cl. 317—70 **17 Claims**



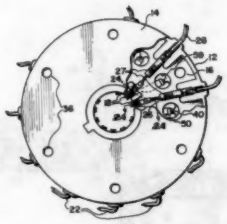
A voltage grading arrangement for lightning arresters particularly adapted for use in substations in which the conductors and the lightning arresters are enclosed within grounded metallic enclosures, the enclosures being filled with an "electronegative" gas such as sulphur hexafluoride (SF_6) under pressure. The lightning arrester elements are enclosed in a porcelain housing and grading elements such as capacitors or resistors or both are disposed on the exterior of the porcelain housing and within the surrounding metal enclosure.

3,733,522

ARC-OVER PROTECTIVE DEVICE

Stephen S. Simovits, Jr., Woodridge, and Christ J. Dumas, Forest View, both of Ill., assignors to American Plasticraft Company, Chicago, Ill.

Filed Jan. 18, 1971, Ser. No. 107,121
Int. Cl. H02h *9/06*
U.S. Cl. 317—77 **18 Claims**



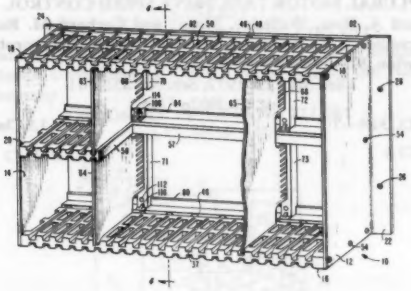
An arc-over protective device is disclosed having a discrete gap whereby the initial arcing is initiated across contiguous edges of the arc gap, and the surfaces adjacent the gap are positioned such that the arc initiated across the contiguous edges moves and spreads along the adjacent surfaces, thereby improving the characteristics of the device.

3,733,523

ELECTRONIC CIRCUIT CARD CAGE

Don E. Reynolds, Redondo Beach; Daniel R. O'Neill, Palos Verdes Peninsula, and Jagdish M. Puri, Azusa, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 11, 1972, Ser. No. 225,469
Int. Cl. H02b 1/02
U.S. Cl. 317—101 DH 6 Claims



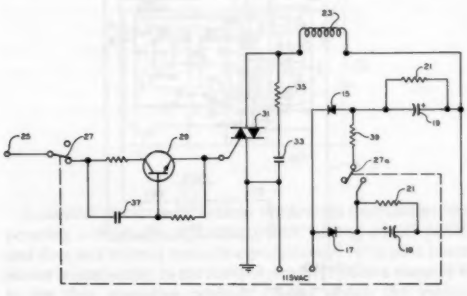
An extremely strong and adaptable card cage for removably receiving a number of circuit cards has spaced apart thick-walled apertured planar side panels extending longitudinally between spaced apart planar end panels and forming a hollow rectangular shell having an open top or bottom. Vertical or transverse grooves in the side walls receive card edges, the side panels being of high thermal conductivity materials and acting as a heat sink. More than one printed circuit card size can be accommodated by utilizing an internal thick-walled guide panel of shorter length between and parallel to the two side panels. The side and guide panels receive mounting brackets along their base edges which have planar, facing flanges for transversely and removably mounting electrical connector blocks which are are secured by resilient clips. When slid into the card cage, a printed circuit merely plugs into one or more electrical connector blocks. Small cards are inserted in facing grooves between an internal panel and one of the side panels, while larger cards are inserted between the side panels at a location having no interposed guide panel.

3,733,524

DEGAUSSING CIRCUIT

John A. Cooksey, Kirkwood, and James Anthony Fazio, Liverpool, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Continuation of Ser. No. 147,428, May 27, 1971, abandoned.
This application Mar. 1, 1972, Ser. No. 230,715
Int. Cl. H01f 13/00
U.S. Cl. 317—157.5 11 Claims



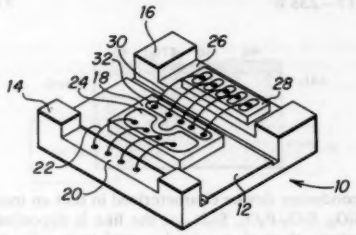
A degaussing circuit having fast recovery time for use in television displays, particularly useful where the display is frequently moved and requires frequent degaussing. By using a parallel combination of two diodes and two capacitors in series placed between the source and the degaussing coil a current which is initially at a maximum but decreases towards zero as the capacitors charge is provided. Additional means provide for quick discharge of the capacitors for immediate reuse of the circuit and for a reduction of any leakage current.

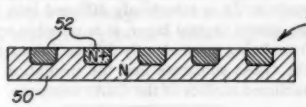
3,733,525

RF MICROWAVE AMPLIFIER AND CARRIER

Eugene A. Robinson, Dallas, and Roy E. Shipley, Plano, both of Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed Mar. 20, 1972, Ser. No. 236,008
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 3 Claims





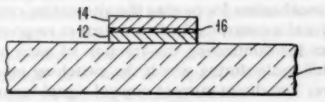
A power transistor and carrier advantageous for RF power (e.g. microwave) amplifier applications with improved linearity in class AB operation. The carrier comprises a channel-shaped member having a centrally located transistor mounting platform between two parallel rail members. One rail member includes a recessed plated portion for receiving base electrode wire bonds, and the other rail member includes a recessed portion including plating which is integrally contiguous with plating on the bottom surface of the carrier, whereby a resistive member may be mounted thereon with electrical contact to the bottom surface. The resistive member is low ohmage with high current capacity and is interconnected with the transistor emitter thereby insuring linear transistor operation by maintaining base-emitter junction forward bias, yet minimizes gain loss attendant with an emitter resistor.

3,733,526

LEAD ALLOY JOSEPHSON JUNCTION DEVICES

Wilhelm Anacher, Yorktown Heights; Kurt R. Grebe, Beacon; James H. Greiner, Millwood; Syamal K. Lahiri, Croton-on-Hudson; Kyu C. Park, Yorktown Heights, and Hans H. Zappe, Granite Springs, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,236
Int. Cl. H01l 3/10
U.S. Cl. 317—234 R 12 Claims



A superconducting Josephson junction tunnel device having in particular lead alloy electrodes (Pb-In and Pb-In-Sn) and a

very precisely defined and dense tunnel barrier comprising an oxide of the lead alloy electrode. Such devices can be thermally cycled between liquid helium temperatures and room temperatures, and provide large tunnelling currents.

3,733,527

SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

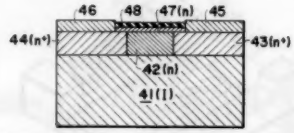
Masatoshi Migitaka; Susumu Takahashi, both of Kokubunji; Hitoshi Sato, Nishitama; Hisao Nakashima; Shojiro Asai, both of Hachioji, and Yuichi Ono, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 22, 1971, Ser. No. 165,066

Claims priority, application Japan, July 22, 1970, 45/63614; Aug. 12, 1970, 45/70074

Int. Cl. H01l *3/20*

U.S. Cl. 317—235 R **7 Claims**



A semiconductor device characterized in that an insulation layer of SiO_2, SiO_2-P_2O_5, Si_3N_4 or the like is deposited on a GaAs substrate through a mixed crystal layer of a ternary system comprising a III_a group element (such as Al and In) or a V_a group element (such as P and Sb), Ga and As. The semiconductor device is characterized in that, even when an impurity such as Zn is selectively diffused into the substrate through the mixed crystal layer, it is possible to prevent the impurity from being anomalously diffused along the boundary between the GaAs substrate and the insulation layer and to obtain a stabilized surface of the GaAs substrate.

3,733,528

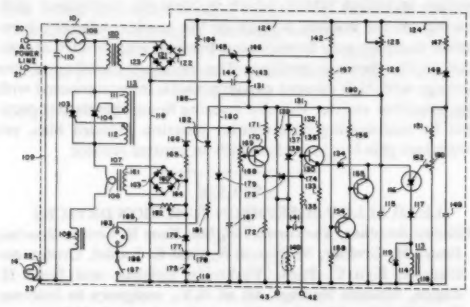
DIMMER UNIT FOR A LIGHTING CONTROL SYSTEM

Benjamin F. Gilbreath, Richardson, Tex., assignor to Hunt Electronics Company, Dallas, Tex.

Filed Aug. 2, 1971, Ser. No. 168,317

Int. Cl. H05b *39/02*

U.S. Cl. 315—291 **7 Claims**



A plurality of dimmer units are connected between an alternating-current power source and different ones of a plurality of lamp loads for separately controlling the flow of alternating current through such lamp leads. Each dimmer unit includes a switching mechanism for passing the alternating current to the lamp load and a controllable direct-current responsive timing mechanism for controlling the fraction of each alternating-current half cycle during which the switching mechanism is conductive. The direct-current control signal input terminals of each dimmer unit are connected between corresponding output terminals of a pair of multiple output pre-set control units. A fader control unit supplies direct-current voltages to the pre-set control units and includes means for varying such voltages in an inverse manner for shifting control of the system from one pre-set control unit to the other. Each pre-set control unit includes a plurality of adjustable voltage dividers for individually determining the fractions of the pre-set unit input voltage appearing at the different ones of the pre-set unit output terminals.

3,733,529

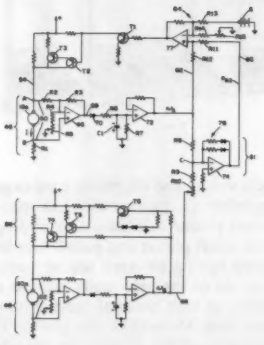
PLURAL MOTOR TAPE DRIVE SPEED CONTROL

Edward A. Ross, Wellesley, Mass., and Gerhard M. Baule, Syracuse, N.Y., assignors to Ross Controls Corporation, Newton, Mass.

Filed May 22, 1972, Ser. No. 255,461

Int. Cl. H02p *5/46*

U.S. Cl. 318—7 **13 Claims**



Controls for winding a strip such as magnetic recording tape at a constant linear speed on to a take-up reel from a supply reel. The controls are responsive to the instantaneous angular speeds of both reels, maintaining at a substantially constant value the ratio of the product of the squares of the speeds to the sum of the squares, by varying the speed of the take-up reel while sufficiently restraining the supply reel to maintain tension on the strip.

3,733,530

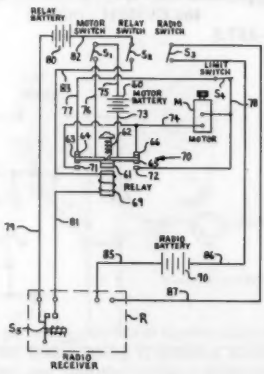
RADIO CONTROLLED MOTOR DRIVEN BUCKING STRAP

Melvin M. Labart, Myrtle Point Route, Box 8, Broadbent, Oreg., and Lew Blanksma, 714 Ash St., Myrtle Point, Oreg.

Filed Aug. 13, 1971, Ser. No. 171,514

Int. Cl. H02p *1/00*

U.S. Cl. 318—16 **7 Claims**



A bucking strap is equipped with a radio-controlled latch device enabling a rodeo official in the judging stand to release

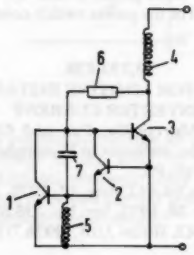
the bucking strap when a contestant has ridden a bucking horse or Brahma bull for a specified interval of time. The placing of the strap on the animal energizes a radio receiver in the device and operates a motor driven latch mechanism to close the latch. When a radio signal is received, it reverses the motor to release the latch and allow the bucking strap to fall off the animal.

3,733,531

ELECTRONIC REGULATING CIRCUIT

Helmut Stechmann, Schwenningen A. N., Germany, assignor to Kienzle Uhrenfabriken GmbH, Schwenningen am Neckar, Germany

Filed Dec. 23, 1971, Ser. No. 211,561
Int. Cl. H02k *33/12*
U.S. Cl. 318—114 **4 Claims**



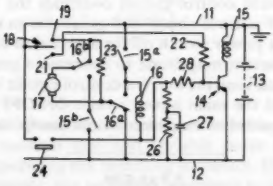
An electronic regulating circuit to stabilize the amplitude of swing of a mechanical vibrating system, comprising an output coil, a control coil, and an output transistor whose base is connected to a voltage divider comprising a resistor and the collector-emitter section of a first control transistor. The base of the first control transistor is connected to the control coil in such a manner that the first control transistor simultaneously will be rendered conductive at least in part, by the same inductive voltage of specific polarity that renders the output transistor conductive.

3,733,532

CONTROL CIRCUITS FOR VEHICLE WINDOW LIFT MECHANISM

William Frank Hill, 2 Oakridge Close, Stafford, England

Filed Oct. 5, 1971, Ser. No. 186,720
Claims priority, application Great Britain, Oct. 13, 1970, 48497/70
Int. Cl. H02p *1/22*
U.S. Cl. 318—266 **1 Claim**



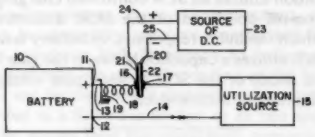
A control circuit for a vehicle window lift mechanism incorporating a manually operable switch having an off position and first and second operative positions. A reversible electric motor is connected in the control circuit in such a manner that in the first operative position of the switch the motor is operated in a direction to lift the window, while in the second operative position of the switch the motor is operated in the opposite direction to lower the window. A limit switch is associated with the window, and is operable in the event of an obstruction being placed in the path of movement of the window while the window is being lifted. The circuit further includes means operable upon operation of the limit switch for reversing the direction of operation of the motor even though the manually operable switch remains in its first operative position. Said means incorporates a delay network whereby the motor is only operated to lower the window for a predetermined period of time.

3,733,533

D. C. CHARGING SYSTEM

Clarence E. Fulkerson, 2012 N. 5th St., Ponca City, Okla.

Filed Apr. 24, 1972, Ser. No. 246,828
Int. Cl. H01m *45/04*; F21l *7/00*
U.S. Cl. 320—2 **4 Claims**



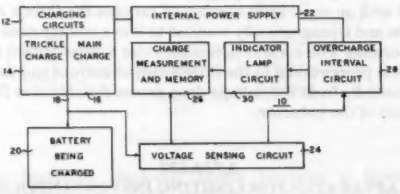
A battery charging system which consists of a probe having opposite-facing conductive surfaces. The probe is insertable between the batteries. Charging current applied to the probe conductive surfaces will charge the battery. The probe can be attached to a bracket to provide a mounting for the battery-operated device.

3,733,534

BATTERY CHARGING DEVICE

Seymour Saslow, Saratoga Springs, N.Y., assignor to Espey Mfg. & Electronics Corp., Saratoga Springs, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,611
Int. Cl. H02j *7/04*
U.S. Cl. 320—23 **4 Claims**

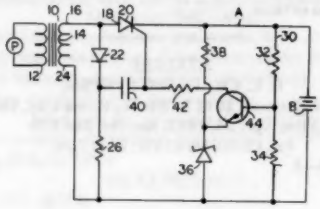


A battery charging device comprising in combination: a transformer for transforming an AC power line supply into usuable energy; a pulsating charging circuit operatively coupled to said transformer and disposed for charging a battery across a charging terminal (**18**) supplying a pulsating charging current during each half cycle of AC alternation; sensing circuit means connected to said charging terminal for sensing the voltage charged in said battery during the non-charging ½ cycle; a measurement and memory circuit connected to said charging circuit and said sensing circuit means including storage means for storing a charge therein which is a function of said battery charge; and, control means responsive to said voltage sensing and coupled to said charging circuit for changing the rate of charge for a time period measured by said measurement and control circuit.

3,733,535
BATTERY CHARGER

Gray C. Ballman, 30 Portland Drive, St. Louis, Mo.

Filed Jan. 3, 1972, Ser. No. 214,562
Int. Cl. H02j 7/10
U.S. Cl. 320—40 5 Claims

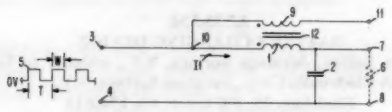


This invention utilizes an SCR controlled charging circuit in which the on-off condition of the SCR is controlled by a transistor which conducts responsive to battery terminal voltage and which utilizes a capacitor between the gate lead of the SCR and the anode of the SCR to anticipate voltage fluctuations and eliminate r-f interference.

3,733,536
CURRENT SENSOR FOR LOW PASS FILTER

Albert V. Gillow, Berkshire, and Wendell P. Marple, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 5, 1972, Ser. No. 259,938
Int. Cl. H02m 1/14
U.S. Cl. 321—10 5 Claims



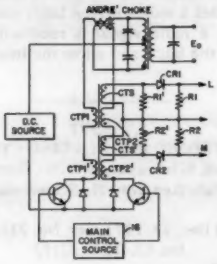
A sense winding is included as part of a current sensor which senses the output current of a low pass filter utilized in a high current power supply system. The sense winding is provided with an equivalent number of turns as the filter's inductor has and is magnetically coupled to it in a voltage cancelling relationship. The current sensor provides a sense output signal which is proportional to the filter's output current and derived substantially from the voltage drop across the effective DC resistance of the inductor.

3,733,537
APPARATUS FOR LIMITING INSTANTANEOUS INVERTER CURRENT

Andress Kernick, Lima, and Glenn W. Ernsberger, Worthington, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,442
Int. Cl. H02m 1/18; H02h 7/10
U.S. Cl. 321—13 4 Claims

The invention relates to a technique for limiting the peak transient currents in the power switches of an inverter wherein a current control circuit compares the current flow in the power switches of the inverter to a reference value and provides protective ON-OFF control of the power switches to prevent overload of the power switches. In the event the current flow through a power switch exceeds a predetermined value, the current control circuit overrides the main power switch ON-OFF control circuit and generates an inhibit signal which turns the power switch off for a period of time required to allow the current magnitude to decrease a predetermined amount at which time the current control circuit inhibit signal

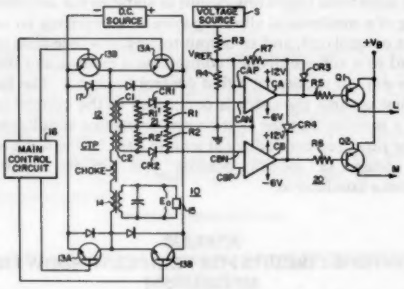


is removed and the main power switch ON-OFF control circuit resumes control of the power switch conduction.

3,733,538
APPARATUS FOR LIMITING INSTANTANEOUS INVERTER CURRENT

Andress Kernick, Murrysville, Pa., and Glenn Ernsberger, Worthington, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 64,442, Aug. 17, 1970. This application Mar. 28, 1972, Ser. No. 238,877
Int. Cl. H02m 1/18; H02h 7/10
U.S. Cl. 321—45 C 3 Claims



The invention relates to a technique for limiting the peak transient currents in the power switches of an inverter wherein a current control circuit compares the current flow in the power switches of the inverter to a reference value and provides protective ON-OFF control of the power switches to prevent overload of the power switches. In the event the current flow through a power switch exceeds a predetermined value, the current control circuit overrides the main power switch ON-OFF control circuit and generates an inhibit signal which turns the power switch off for a period of time required to allow the current magnitude to decrease a predetermined amount at which time the current control circuit inhibit signal is removed and the main power switch ON-OFF control circuit resumes control of the power switch conduction.

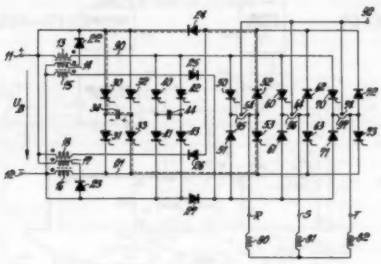
3,733,539
MULTI-PHASE THYRISTOR INVERTER

Rainer Wirtz, Unterriexingen, Germany, assignor to Robert Bosch GmbH, Gerlingen-Schillerhoehe, Germany

Filed Mar. 6, 1972, Ser. No. 232,093
Claims priority, application Germany, Mar. 24, 1971, P 21 14 098.7
Int. Cl. H02m 7/48
U.S. Cl. 321—45 C 7 Claims

To simplify the reset circuitry of multi-phase thyristor inverters having two similar groups of thyristors, one group each

controlling the connection of the phases of one polarity, a pair only of reset or quenching circuits are provided, one each output being connected to all the thyristors of a respective group to extinguish the thyristors of the group connected to provide output of the respective polarity during firing thereof. The cir-



cuit is preferably connected through an input choke having a plurality of windings in the form of current transformer windings, the additional windings being interconnected with the thyristor circuit to extend current flow through the chokes and provide for smooth commutation.

3,733,540

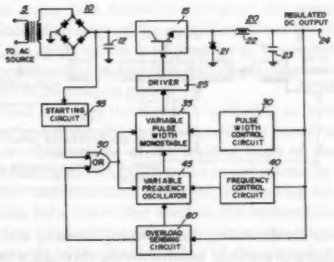
SWITCHING REGULATOR SWEEP STARTING PROTECTION CIRCUIT

George C. Hawkins, Hanover Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 3, 1972, Ser. No. 223,099

Int. Cl. H02m 7/52

U.S. Cl. 321—47 **10 Claims**



An overload protection system for a switching power supply includes a variable rate and variable pulse duration drive source for operating the switching transistor. Upon turn-on of the power supply, the switching transistor is driven with low repetition rate pulses having a predetermined time duration. The rate is gradually increased to a normal operating rate to minimize turn-on transients. Load sensing circuitry is used in conjunction with the variable rate drive source to cause the drive source to operate at the low rate in the event that an overload is applied to the power supply, and to turn off the drive source if the overload persists. Circuitry for providing automatic reset following an overload is employed. A feedback circuit is used to vary the duration of the drive pulses to provide automatic voltage regulation.

3,733,541

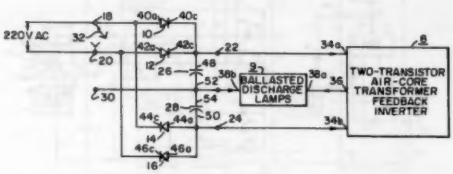
RECTIFIER OPERABLE FROM DUAL INPUT VOLTAGES FOR USE WITH BALLASTED DISCHARGE LAMPS

Robert T. Elms, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 15, 1972, Ser. No. 263,040

Int. Cl. H05b 41/26

U.S. Cl. 321—47 **3 Claims**



A dual-voltage-input, three-terminal-output, rectifier for use with a two-transistor, air-core transformer feedback inverter for supplying high frequency to ballasted discharge lamps. Four diodes are used. Depending on the input voltage, the diodes are, by means of a disconnectable conductor, connected either in a full-wave bridge, or as two sets of parallel diodes. The diodes feed two capacitors connected in series, and the common point between the capacitors provides the third output terminal and is available for an input connection at the lower of the dual input voltages.

3,733,542

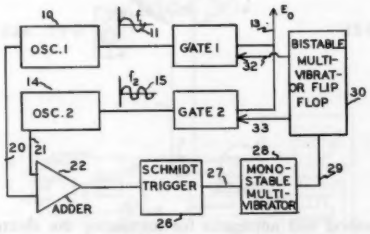
FREQUENCY STEP GENERATOR

Mario D. Dianora, Deptford, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1972, Ser. No. 266,029

Int. Cl. H02m 5/00; H03b

U.S. Cl. 321—60 **5 Claims**



The invention disclosed herein provides a frequency generator having a pair of oscillators producing two frequencies coupled thru individual gate circuits to provide an output of one or another of said frequencies. There is provided a gating circuit and an adder which combines the output frequencies which actuate a Schmidt trigger which in turn actuates a bistable multivibrator which controls the individual gates.

3,733,543

ADJUSTABLE FREQUENCY CURRENT SOURCE POWER SUPPLY OF THE INVERTER TYPE

Charles E. Rettig, Brookfield, Wis., assignor to The Louis Allis Company, Milwaukee, Wis.

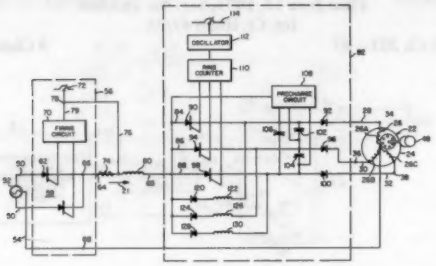
Filed Aug. 17, 1972, Ser. No. 281,601

Int. Cl. H02m 5/44

U.S. Cl. 321—2 **7 Claims**

A power supply of the inverter type for controlling the operative condition of an alternating current load includes a

power source providing an output current of a desired magnitude. An inductor is connected in the output of the power source to assist in maintaining the output current at the desired magnitude. An inverter is connected in series with the



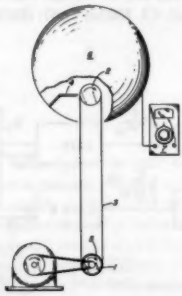
power source and inductor and is coupled to the alternating current load for cyclically directing the output current of the power source to the load for controlling the operative condition thereof.

3,733,544

METHOD FOR EVALUATING ELECTROSTATIC PROPENSITY OF FABRICS AND SOFT SHEETING MATERIALS

John T. Petrick, Fredericksburg, Va., and Milton Bailey, Wayland, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 229,016
Int. Cl. G01r *5/28*
U.S. Cl. 324—32 **9 Claims**



A method and apparatus for measuring the electrostatic charge generating capacity of various materials and simulating the contact effects that result in static charge build-up on an individual. A Van de Graaff type generator is employed having a plurality of rollers. Charge is accumulated in the vicinity of at least one roller and measured at another. Two rollers and a single material belt to be tested are employed or more than two rollers and a plurality of belts may be used.

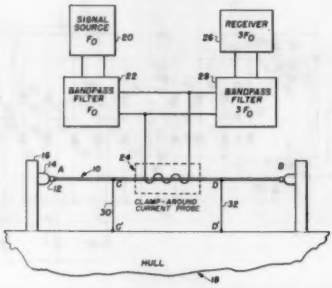
3,733,545

METHOD FOR LOCATING NONLINEAR MECHANICAL JUNCTIONS OF METALLIC ELECTRICAL CONDUCTORS

Raymond F. Elsner, Lombard, and William F. Lancaster, Oak Lawn, both of Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 13, 1972, Ser. No. 243,728
Int. Cl. G01r *31/08*
U.S. Cl. 324—52 **3 Claims**

A technique and apparatus for identifying and accurately locating nonlinear mechanical junctions of electrical conductors whereby RF interference generated by nonlinear junctions can be eliminated. A fundamental signal is applied to a suspected junction by means of a current probe held in close proximity thereto. Receiver apparatus senses whether third harmonic signals are generated thereby. If third harmonic signals are generated the suspected junction is identified as being nonlinear and its exact location is then determined by



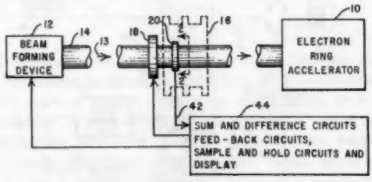
connecting a bypassing conductor between the suspected location of the nonlinearity and ground and measuring the resultant reduced amplitude third harmonic signals. The exact location is determined when the bypassing conductor is moved as close to the suspected nonlinearity as is physically practical while maintaining the reduced amplitude of the third harmonic signal.

3,733,546

BEAM CURRENT POSITION, INTENSITY AND PROFILE MONITORING BY RESISTIVE DETECTION OF BEAM IMAGE WALL CURRENTS

Andris Faltens, Berkeley; Edward C. Hartwig, Walnut Creek, both of Calif., and Robert T. Avery, Orinda, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 21, 1971, Ser. No. 164,761
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 R **10 Claims**

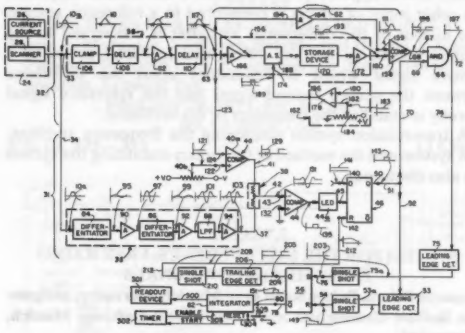

BEAM FORMING DEVICE
ELECTRON RING ACCELERATOR
SUM AND DIFFERENCE CIRCUITS
FEED-BACK CIRCUITS, SAMPLE AND HOLD CIRCUITS AND DISPLAY

A monitor for detecting the position, intensity and profile of a pulsed charged-particle beam moving through a beam pipe, including a pair of electrically conductive flanges inserted in the pipe, separated by an insulating ring and interconnected either with numerous resistors that are uniformly distributed around and connected in parallel between the periphery of the flanges or with a solid band of uniform resistive material or a thin resistive film. The pulsed beam induces image wall currents in the beam pipe which have nearly the same waveform and magnitude as the beam current but are distributed around the pipe wall according to the position of the beam. The voltages developed across the resistors are measured across the flanges at four symmetrical points. The position of the beam is a function of the differences of the voltages at opposing points, while the intensity of the beam is a function of the sum of the voltages at the four points. The profile of a beam of asymmetric cross section is indicated by the levels of the individual voltages at the four points and, for greater accuracy, at additional points.

3,733,547
METHOD AND APPARATUS FOR MEASURING PARTICLE CONCENTRATION IN A FLUID SUSPENSION OF PARTICLES

Wallace H. Coulter, Miami Springs; Walter R. Hogg, Miami Lakes, and Millard Dumas Longman, North Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 4, 1972, Ser. No. 215,374
Int. Cl. G01n *27/100*
U.S. Cl. 324—71 CP **32 Claims**



The apparatus includes (1) a Coulter type particle analyzing device for producing a particle pulse each time a particle is in a sensing zone, each particle pulse having poorly defined leading and trailing edges and a duration related to the time the particle is in the sensing zone, (2) electrical circuitry connected to the output of the particle analyzing device for producing, upon sensing each particle pulse above a predetermined threshold level, an output pulse having a selected clearly defined duration established between (a) a clearly defined leading edge of the output pulse occurring at a time substantially equal to the time of inflection of the slope of the leading edge of the particle pulse and (b) a clearly defined trailing edge of the output pulse occurring at substantially the same time that the instantaneous value of the trailing edge of the particle pulse falls below the level of the instantaneous value of the leading edge of the particle pulse at the time of inflection of the slope of the leading edge of the particle pulse, and (3) apparatus for measuring and displaying the duty factor of a train of the output pulses.

The method includes the steps of: initiating an output pulse for each particle pulse at a time substantially equal to the time of inflection of the slope of the leading edge of the particle pulse, terminating each output pulse at substantially the same time that the instantaneous value of the trailing edge of the particle pulse falls below the level of the instantaneous value of the leading edge of the particle pulse at the time of inflection of the slope of the leading edge of the particle pulse, and measuring the duty factor of a train of the output pulses. This duty factor is closely proportional to particle concentration.

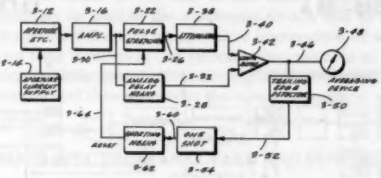
3,733,548
APPARATUS AND METHOD FOR MEASURING PARTICLE CONCENTRATION OF A SUSPENSION PASSING THROUGH A SENSING ZONE

Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Apr. 28, 1971, Ser. No. 138,096
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **26 Claims**

Apparatus and method for measuring particle concentration in a fluid suspension by obtaining signals from a sensing zone and relating the duration of time occupied by the particles in suspension while traversing the sensing zone to the total time. Concentration is proportional to the percentage of time particles are in the sensing zone.

The apparatus includes means for measuring the duration of a predetermined portion of each particle pulse between two ascertainable points thereof, such as for example, at some fraction of its amplitude and deriving thereby a plurality of du-



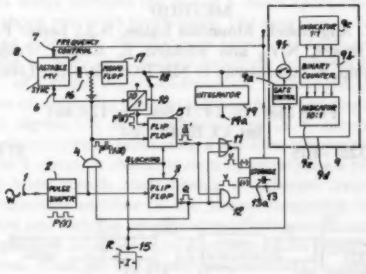
ration-measuring pulses. The direct current component of these duration-measuring pulses averaged over the time during which they occurred is obtained in a d.c. meter and is proportional to concentration. The meter indication may be calibrated in terms of concentration.

The apparatus and method are particularly applicable in connection with a Coulter particle analyzing device in which the sensing zone is the aperture of the Coulter device.

3,733,549
SYSTEM FOR MEASURING INSTANTANEOUS FREQUENCY VALUES

Peter Harzer, Eningen, Germany, assignor to Wandel u. Goltermann Elektronische Prazisionsmessgerate, Reutlingen, Germany

Filed Apr. 10, 1972, Ser. No. 242,462.
Claims priority, application Germany, Apr. 10, 1971, P 21 17 737.7
Int. Cl. G01r *23/14*
U.S. Cl. 324—79 D **11 Claims**

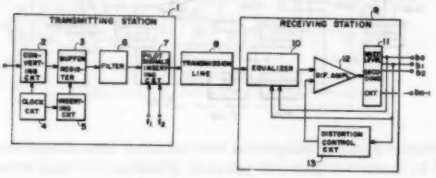


An incoming oscillation, whose frequency during a brief reading interval is to be determined, is converted into a first pulse train of cadence *f* to be compared with the cadence *f'* of an astable multivibrator responsive to a stored control voltage. During the reading interval the control voltage is modified by a signal depending upon the difference of the two cadences until the same are identical; during an adjoining extended storage period, the modified control voltage keeps the multivibrator operating at the unknown cadence *f* which is then measured by a binary counter.

3,733,550
MULTILEVEL SIGNAL TRANSMISSION SYSTEM

Kimio Tazaki, Hanakoganei, Kodaira-shi, Tokyo; Hajime Yamamoto, Tokyo; Shigehiko Hinoshita, Yokohama, and Shoji Hagiwara, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Fujitsu Limited, Kawasaki, both of Japan

Filed Apr. 20, 1972, Ser. No. 245,949
Claims priority, application Japan, Apr. 30, 1971, 46/29083
Int. Cl. H04b *1/00*
U.S. Cl. 325—38 A **12 Claims**

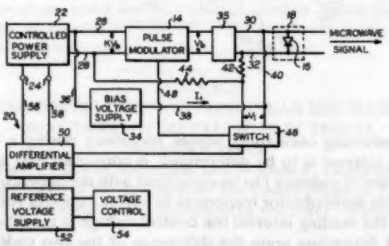


Apparatus is disclosed for transmitting a multilevel signal together with at least one pilot signal of specified frequency as a timing signal for determining the sampling position of a transmitted signal and/or a signal for reproducing a demodulating carrier. Further, a reference level signal of a predetermined level is inserted in the multilevel signal train and the pilot signals are inserted in the multilevel signal train after frequency components in the neighborhood of the specified frequencies of the pilot signals are removed from the multilevel signal train on the transmitted side of the transmission line. In processing the multilevel signals the deviation of a sampled transmitted level of the reference level signal from the predetermined level thereof is detected; next, the frequency components in the vicinity of the pilot signals of the specified frequencies removed on the transmitting side of the line are extracted from the deviation; and then the signal distortion of the multilevel signal is corrected with the extracted frequency components on the receiving side on the transmission line.

3,733,551
FREQUENCY STABILIZATION APPARATUS AND METHOD

Harry A. Augenblick, Mountain Lakes, N.J.; Lester F. Eastman, Ithaca, N.Y., and Richard E. Keller, Washington Township, N.J., assignors to MICROLAB/FXR, Livingston, N.J.

Filed Mar. 26, 1971, Ser. No. 128,461
Int. Cl. H04b *1/04*
U.S. Cl. 325—105 **37 Claims**



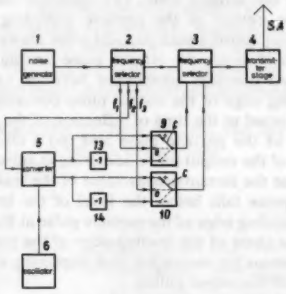
A frequency stabilization system for stabilizing the frequency of a transmitter of the type comprising an oscillator having an active element, the resonant frequency of which varies as a function of at least the resistance of the element and the difference between a biasing signal and the threshold voltage of the element wherein the transmitter includes control means which is responsive to a control signal for producing the biasing signal and a lead connecting the control means with the element. The system includes first signal means for producing a signal which is proportional to the difference between the biasing signal and the threshold voltage. The first signal means is connected to the element so that a second signal is developed across the element in response to the application of the first signal thereto. The second signal is sensed by sensing means and is applied to one input of a differential amplifier, the other input of which is connected to a reference source. The output of the differential amplifier is connected to the control means so that the differential amplifier produces a control signal which is dependent upon the difference between the sensed second signal and the reference signal thereby to stabilize the frequency of the oscillator.

A transmission system employing the frequency stabilization system and the method of frequency stabilizing the system are also disclosed.

3,733,552
SYSTEM FOR THE INTERFERENCE-FREE RADIO TRANSMISSION OF SIGNALS

Johannes Peters, Deisenhofen near Munich, Germany, assignor to Bolkow Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Aug. 30, 1962, Ser. No. 220,953
Claims priority, application Germany, Sept. 21, 1961, B 64085
Int. Cl. H04k *1/00*
U.S. Cl. 325—122 **7 Claims**



6. In a system for the radio transmission of control signals to a self-propelled body having control planes in combination a noise generator for producing a broad noise band, and a first frequency selector for suppressing in that band at least one unique band and a second frequency selector for replacing said at least one unique band by another band of an identical noise power frequency response being correlated by frequency conversion relative to a reference band in that broad noise band and a transmitting stage for transmitting to the body to be guided the frequency band combined of frequency bands which had been suppressed and replaced by correlation bands which first frequency selector is connected with a frequency converter and with control stages being coordinated with one control plane each, which converter is fed from an oscillator for producing the correlated frequency bands, which converter is further connected directly and through a phase-reverter stage each with the above-mentioned control stages for each frequency band, which control stages are connected with the above-mentioned second frequency selector for feeding the suppressed band or correlated frequency bands to said frequency selector, said stages forming the transmitter base, and a receiving station on the self-propelled body comprising an input stage and a frequency selector, which is connected

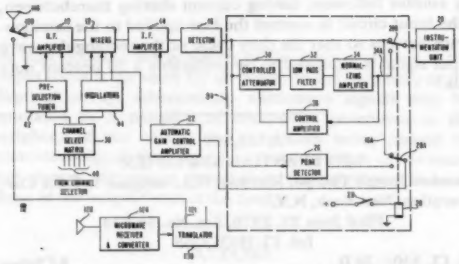
for each control plane with one converter, each being coordinated to one frequency band, shifting the information carrying band into the frequency range of the reference band and a correlator for each control plane band, and which correlators are fed from the output of the above-mentioned converters and from the reference band which correlators determine the control signals for each control plane from the frequency bands supplied by the above-mentioned frequency selector and from the reference frequency bands, said control signals being given at the control center.

3,733,553

RECEIVER FOR PULSE MODULATED SIGNALS

Frank A. Magnante, Yorktown Heights, and Donald J. Toman, Pleasantville, both of N.Y., assignors to Tull Aviation Corporation, Armonk, Del.

Filed July 29, 1971, Ser. No. 167,180
Int. Cl. H03c *1/00*
U.S. Cl. 325—321 **11 Claims**



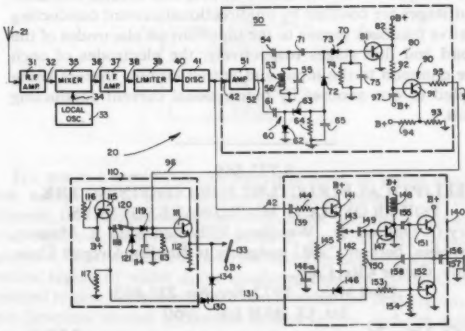
The receiver includes a peak detector for automatically limiting the gain of the receiver to prevent overloading and distortion. A normalizing circuit is provided between the detector stage and the audio stage which comprises a variable scale factor circuit operable to maintain the signals supplied to the audio stage at a level corresponding to a substantially constant direct current voltage level component derived from the carrier signal.

3,733,554

COMMUNICATION RECEIVER WITH TONE OPERATED AUDIO AMPLIFIER CIRCUITRY

Keith H. Wycoff, Lexington, Nebr., and Delane A. Wycoff, Iowa City, Iowa, assignor to Keith Wycoff, by said Delane A. Wycoff

Filed Mar. 19, 1971, Ser. No. 126,014
Int. Cl. H04n *1/10*
U.S. Cl. 325—478 **14 Claims**



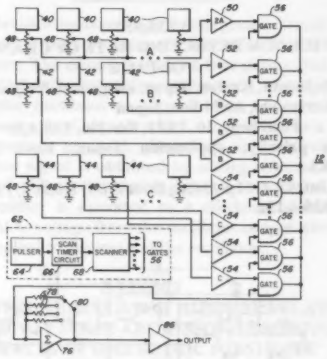
The receiver has a processing circuit which detects the control tone in the intelligence in the RF carrier wave, a decoder circuit responsive to the control tone for generating a control signal, an electronic switch responsive to the control signal to provide an enabling signal which persists for a predetermined time interval, an audio amplifier circuit which is operative to amplify intelligence from the processing circuit for the predetermined time interval when the control tone is present, a speaker for converting the detected intelligence into sound waves, a switch coupling a source of override signal to the electronic switch and to the audio amplifier circuit, the switch being movable to one position for coupling the override signal to the electronic switch and to the audio amplifier circuit respectively to disable the electronic switch and to maintain the audio amplifier circuit operative irrespective of whether a control tone is received the switch being movable to a second position to decouple the override signal from the audio amplifier circuit and thereby render the same inoperative.

3,733,555

SHOCK SPECTRUM ANALYZER AND SYNTHESIZER SYSTEM

Phillip Marshall, Lexington, and Randall L. Kroken, Wilmington, both of Mass., assignors to Marshall Research & Development Corp., Burlington, Mass.

Filed Aug. 19, 1970, Ser. No. 65,191
Int. Cl. H03b *19/00*
U.S. Cl. 328—14 **3 Claims**



A shock spectrum analysis and synthesis method and apparatus which includes the use of a shock spectrum analyzer and a shock spectrum synthesizer. The spectrum analysis provides an automatic simultaneous shock spectrum analysis of both the primary and residual spectrum responses for a plurality of single-degree-of-freedom, mass-spring-damping systems of a plurality of natural frequencies and displaying the output signals on an oscilloscope or X-Y recorder. The synthesis comprises generating a variable transient electrical input to a vibration shaker system by generating a plurality of steady state signals each having a different frequency. A predetermined number of the lowest frequency waves are summed and then the remaining oscillating waves are sequentially gated in an order corresponding to the higher frequencies first. Then all the waves are summed to produce the desired transient.

3,733,556

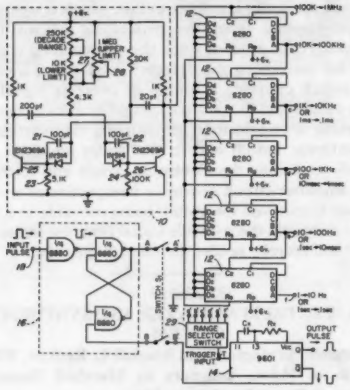
COMPACT VARIABLE TIME BASE AND DELAYED PULSE OSCILLATOR

Alfred L. Minton, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 20, 1972, Ser. No. 245,919
Int. Cl. H03k *21/08, 21/30*
U.S. Cl. 328—39 **4 Claims**

A bi-functional oscillator possessing a range of several decades and with a selectively delayed output. Variable

frequency pulses are obtainable from a series of dividers, with each decade range having a given delay period. Each succes-



sive divider decreases the lower frequency limit by a factor of ten and increases the output pulse delay by a similar factor of ten.

3,733,557

DEVICE FOR DETECTING RATE OF CHANGE IN VOLTAGE

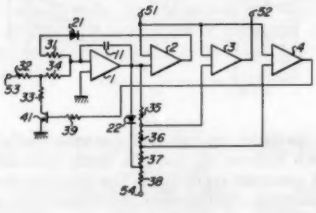
Hiroshi Fujinami, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 10, 1971, Ser. No. 179,429

Claims priority, application Japan, Nov. 27, 1970, 45/104983

Int. Cl. G01p *15/08*; **B60t** *8/08*; **H03k** *5/153*

U.S. Cl. 328—132 **2 Claims**



When the difference between a voltage representative of a reference velocity which gradually falls off at a rate determined by an integrating constant and a voltage proportional to the rotating velocity of a rotating body, becomes greater than a predetermined value, the reference velocity voltage is made to approach the rotational velocity proportional voltage by rendering the integrating constant small. Thereby, the time during which a spurious signal indicating a deceleration is developed though the rotating body is actually accelerating, can be shortened to such a considerable extent that no undesireable effects are incurred in practical operation.

3,733,558

STABLE LOW CURRENT AMPLIFIER

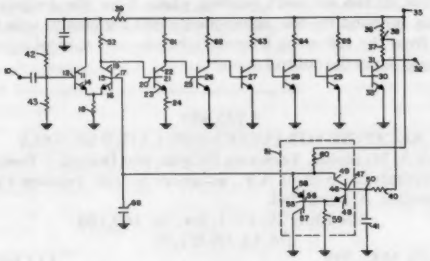
Joseph F. Cramer, Coral Springs, and Douglas W. Nickerson, North Miami Beach, both of Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 20, 1971, Ser. No. 145,264

Int. Cl. H03f *3/18*

U.S. Cl. 330—17 **19 Claims**

Limiter amplifier adapted to be constructed in integrated circuit form and including a plurality of direct current coupled transistor stages capable of limiting operation from a one-cell battery. The amplifier has sufficient gain to limit on noise so that a rectangular wave output signal is developed at the output. An integrating network responsive to the output signal provides a bias voltage which is coupled through complemen-



tary emitter followers, having current sharing therebetween, to the input circuit to control the bias applied to the semiconductor devices so that the duty cycle of the rectangular wave output signal is regulated to be preferably a 50 percent duty cycle.

3,733,559

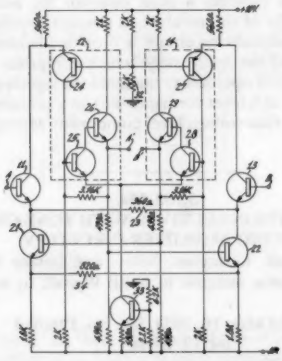
DIFFERENTIAL AMPLIFIER

Laurence Joseph Thorpe, Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,534

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **8 Claims**



The output circuit electrodes of first and second transistor input stages are coupled by unidirectional current conducting negative feedback means to the input circuit electrodes of the second and first stages respectively, the electrodes of each stage common to the input and output circuits thereof being coupled to one another by bidirectional current conducting means.

3,733,560

ELLIPTICAL STRUCTURE FOR COMBINING THE POWER OF MANY MICROWAVE SOURCES

Henry G. Oltman, Jr., Woodland Hills, and Hans A. Maurer, Tarzana, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

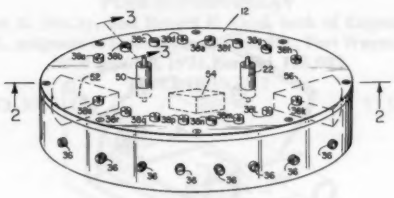
Filed Mar. 3, 1972, Ser. No. 231,663

Int. Cl. H03f *3/10, 3/60*

U.S. Cl. 330—34 **9 Claims**

A non-resonant microwave cavity shaped substantially in the form of a right elliptical cylinder, means for introducing

microwave energy at one focus of the elliptical cavity and removing microwave energy at the other focus of the elliptical cavity; and means on the periphery of the elliptical cylindrical cavity for amplifying incident microwave energy and for retransmitting it; whereby microwave energy introduced into the cavity at one focus of the ellipse is amplified by a plurality of microwave amplifiers, and the amplified energy is delivered to the other focus in phase. Because the total distance from



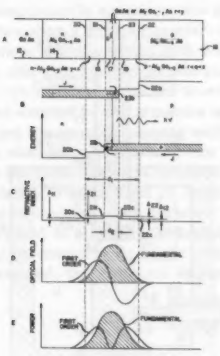
the input focus to the periphery of the cavity and back to the output focus is the same for all points on the periphery of the elliptical cavity. Alternatively microwave signals may be generated by a plurality of microwave generators at the periphery of the cavity, the generators being phased by microwave signals from the input focus of the cavity to cause high energy microwave signals from the generators to be in phase at the output focus of the cavity.

3,733,561

HIGH POWER, FUNDAMENTAL TRANSVERSE MODE OPERATION IN DOUBLE HETEROSTRUCTURE LASERS

Izuo Hayashi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 27, 1971, Ser. No. 166,370
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 H **12 Claims**



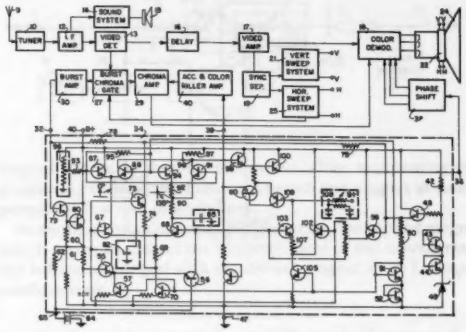
For use in a semiconductor injection laser, an active medium comprises a body of semiconductor material having therein: first and second heteroboundaries defining a first active region therebetween of width d_1 for confining optical photons, third and fourth heteroboundaries defining a second active region of width d_2 for confining injected carriers, the second region being centrally located within the first region, a p-n junction located within the second region, and the magnitude of the index refraction step Δ_{11} and Δ_{12} at the first and second heteroboundaries, respectively, satisfying approximately the relationships $\Delta_{11}d_1^2 = 0.1\ \mu m^2 = \Delta_{12}d_1^2$.

3,733,562

SIGNAL PROCESSING CIRCUIT FOR A COLOR TELEVISION RECEIVER

Gildo Cecchin, 8744 W. North Ter., Niles, Ill., and Francis H. Hilbert, 8741 Lyndale, River Grove, Ill.

Division of Ser. No. 880,320, Nov. 26, 1969. This application Mar. 4, 1971, Ser. No. 120,969
Int. Cl. H03c *1/54*
U.S. Cl. 332—9 T **4 Claims**



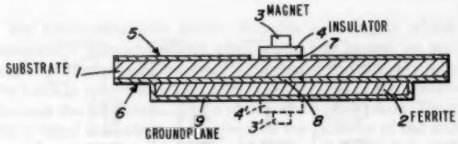
A color television receiver uses an integrated circuit to provide the subcarrier reference signals and ACC control voltage for the receiver. The circuit includes a first differential amplifier, unbalanced at the burst signal frequency, operated as the color reference oscillator to provide first and second differently phased output signals which are applied to a pair of differential steering gates. A phase-shift hue control of the color reference signal is obtained by adding selected outputs of the pair of differential steering gates. In addition, a differential amplifier is operated as a diodeless detector for deriving an ACC voltage from the oscillator output when burst signals are applied to the input of the oscillator.

3,733,563

MICROSTRIP CIRCULATOR WHEREIN RELATED MICROSTRIP PATTERNS ARE DISPOSED ON OPPOSING SURFACES OF DIELECTRIC SUBSTRATE

Arthur L. Poirier, Ottawa, Ontario, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Defense, Canada

Filed Dec. 7, 1971, Ser. No. 205,669
Int. Cl. H01p *1/32*
U.S. Cl. 333—1.1 **7 Claims**



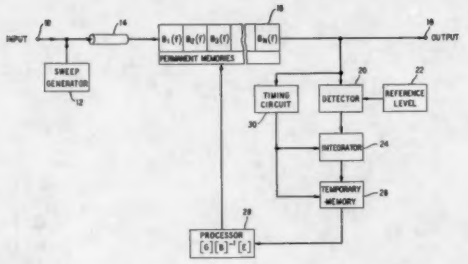
This invention relates to a microstrip circulator used for steering electrical signals in predetermined directions along particular paths in a controlled manner. A particular embodiment of a microstrip circulator according to the present invention utilizes a non-ferrite dielectric substrate having metal film applied to both major surfaces of the substrate. The distributed electronic components of the circulator are formed in a circular configuration in the metal film on both major surfaces. A permanent magnet is spaced on one major surface directly over the circular configuration of electronic components and a ferrite disc is placed on the opposite major face directly opposite the magnet. A conductive groundplane is then applied to the outer surface and edges of the ferrite disc.

3,733,564

ADJUSTABLE EQUALIZER CONTROL APPARATUS

Chih-Yu Kao, Lawrence, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1972, Ser. No. 227,739
Int. Cl. H04b 3/04
U.S. Cl. 333—18 17 Claims



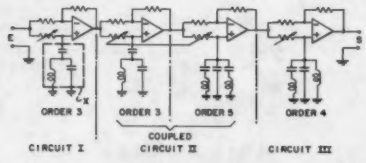
Apparatus for controlling an equalizer having a plurality of independently adjustable, serially connected equalizer sections. The apparatus controls the equalizer to minimize a sum of squares of integrated transmission system misalignments, the integrations taking place over as many frequency ranges as there are equalizer sections. The effect of each equalizer section in each frequency range is considered in determining required adjustments for all sections.

3,733,565

EQUALIZER FOR LINEARIZING A TRANSMISSION CHANNEL PHASE-FREQUENCY RESPONSE UTILIZING ODD AND EVEN ORDER ALL-PASS NETWORKS

Jean Marc Pierret, Falicon Nice, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1971, Ser. No. 155,930
Claims priority, application France, July 9, 1970, 7026336
Int. Cl. H03h 5/00
U.S. Cl. 333—28 7 Claims



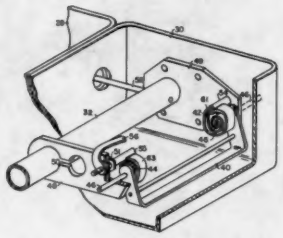
An equalizer for linearizing a non-linear phase-frequency characteristic and formed from successive all-pass filter stages in which at least first and second odd order filter stages align groups of frequencies along respective linear phase-frequency approximation through the introduction of appropriate symmetrical phase shifts. A third even order filter stage linearly superimposes the linear approximations by way of an antisymmetrical phase shift.

3,733,566

VARIABLE OUTPUT RESONATOR COUPLING LOOP HAVING SHORTED TURN MOUNTED ABOUT FLEXIBLE CONNECTING CONDUCTOR

Herbert Hanft, Alexandria, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 3, 1971, Ser. No. 149,581
Int. Cl. H01p 7/04, 5/04
U.S. Cl. 333—82 B 6 Claims



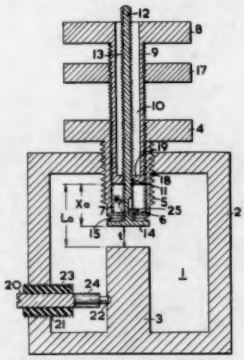
A flexible windup connector at each end of a coupling loop within a resonant cavity is enclosed in a shorted turn which minimizes the inductance change of each connector as the coupling loop is varied from maximum to minimum.

3,733,567

COAXIAL CAVITY RESONATOR WITH SEPARATE CONTROLS FOR FREQUENCY TUNING AND FOR TEMPERATURE COEFFICIENT OF RESONANT FREQUENCY ADJUSTMENT

Albert Henry Johnson, Christchurch, England, assignor to Minister of Aviation Supply in Her Brittannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 13, 1971, Ser. No. 133,691
Int. Cl. H01p 1/30, 7/04
U.S. Cl. 333—82 B 4 Claims



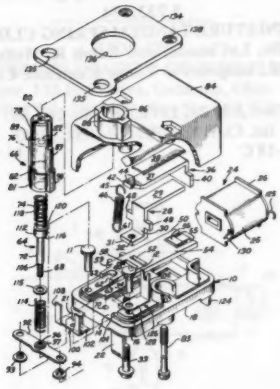
A temperature compensated tuning apparatus for a co-axial resonant cavity comprises a telescopic tuning member having a first section and a second section, the sections having different co-efficients of thermal expansion and being connected by a co-efficient of expansion adjusting screw which has an internally threaded bore engaged with the first section and an externally threaded part engaged with the second section; a capacitive disc mounted co-axially on the end of the first section within the cavity is maintained in electrical contact with the second section by means of resilient contact members while permitting a telescopic relative motion of the first sec-

tion with respect to the second section. The first member is made of an alloy of 36 percent nickel and 64 percent iron while the second member and the co-efficient expansion screw are made of brass or copper. The arrangement provides a cavity having an adjustable positive thermal co-efficient of resonant frequency which is useful for compensating for the negative co-efficient of frequency of a Gunn diode oscillator.

3,733,568
PUSH BUTTON RELAY

Robert E. Prouty, and Robert E. Graf, both of Logansport, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Sept. 30, 1971, Ser. No. 185,082
Int. Cl. H01h *3/12*
U.S. Cl. 335—186 **11 Claims**



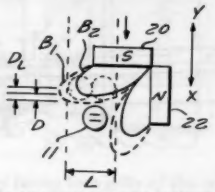
A push button relay, in which the closing of the relay contacts is independent of the magnetic circuit of the relay, includes a coil, a magnetizable armature, one end of which normally exerts a force upon a movable contact carrying member to move its contacts out of contact with the stationary contacts of the relay, and a manually operable push button which, when depressed, contacts the armature to overcome the contact opening force exerted by the armature upon the movable contacts, and urges the contact carrying member and its contacts toward the stationary contacts. When the contacts are closed and when the push button is returned, the coil is energized to maintain the armature out of contact opening relationship with the contact carrying member. The armature is preferably maintained in spaced relationship to the contact carrying member by energization of the coil, such that when the coil is deenergized, the armature impactingly opens the contacts.

3,733,569
MAGNETIC SWITCHING ASSEMBLY

Noboru Yanagisawa, and Taneo Murata, both of Tokyo, Japan, assignors to Alps Electric Co., Tokyo, Japan

Filed Apr. 25, 1972, Ser. No. 247,319
Claims priority, application Japan, May 10, 1971, 46/30964
Int. Cl. H01h *13/14*
U.S. Cl. 335—207 **12 Claims**

A magnetic switching assembly is disclosed in which the magnet stroke for operative switching is reduced while maintaining reasonably wide tolerances in the relative positioning of the components thereby to provide faster and more accurate switching at low cost. In a preferred embodiment of the invention an actuating magnet is positioned adjacent a reed switch for movement toward and away from the switch contacts to provide operative switching in both directions. A second permanent magnet is disposed at right angles to the actuating magnet and is effective to deflect the magnetic field associated therewith thereby to provide a steeper magnetic field strength gradient in the direction of the magnet stroke. The



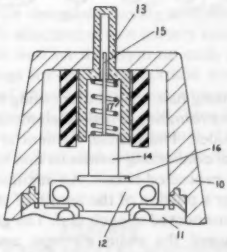
magnet stroke is thereby minimized while maintaining the positioning tolerances of the reed switch and magnet at values permitting low cost manufacture.

In another embodiment of the invention, the second magnet which serves to deflect the magnetic field of the driving magnet is formed integral with the driving magnet in an L-shaped configuration.

3,733,570
INDICATOR MEANS FOR ELECTROMAGNETIC DEVICES

Brian Stanley Worrall, Sutton Coldfield, England, assignor to Expert Industrial Controls Limited, Lount, Ashby-de-La-Louch, England

Filed June 28, 1971, Ser. No. 157,258
Claims priority, application Great Britain, July 2, 1970, 32,088/70
Int. Cl. H01f *7/08*
U.S. Cl. 335—255 **7 Claims**



An electromagnetic device includes a casing in which is mounted a solenoid which when energized moves an armature. For manual operation of the armature a manually operable knob is provided which effects movement of the armature through the intermediary of a spring and a push piece. To enable a visual indication to be given of the position of the armature the push piece mounts an indicator rod which is visible through the manually operable knob and the position of the indicator rod indicates the position of the armature.

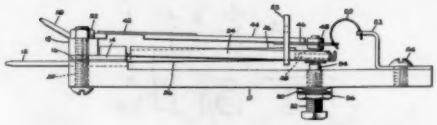
3,733,571
SWITCH CONTROL

Stanley J. Budlane, Fulton, and Donald H. Stoll, Morrison, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Dec. 27, 1971, Ser. No. 212,201
Int. Cl. H01h *61/00*
U.S. Cl. 337—89 **13 Claims**

A switch control is disclosed comprising a frame to which first and second contacts are mounted. An electrically con-

ductive pendant arm adapted to move when electrically heated is also mounted to the frame. A third contact is mounted on the pendant arm in position to make and break contact with the first contact upon movement of the pendant arm relative to the first contact. A fourth contact is mounted on the pendant arm in position to make and break contact



with the second contact upon movement of the second contact with respect to the pendant arm. Stop means are also mounted to the pendant arm for limiting movement of the second contact with respect to the fourth contact. The various switch contacts are adapted for suitable connection to motor start and run windings and to a source of electric current.

3,733,572

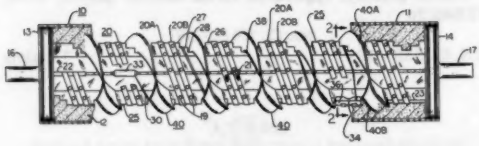
CURRENT LIMITING FUSE

Harvey W. Mikulecky, Racine, Wis., assignor to McGraw-Edison Company, South Milwaukee, Wis.

Filed Dec. 24, 1970, Ser. No. 101,254

Int. Cl. H01h *85/38*

U.S. Cl. 337—273 **15 Claims**



A current limiting fuse in a tubular casing has sand or highly divided quartz surrounding a fusible element helically wound on a core or spider. The fusible element is connected at its ends to electrical connecting terminals that enable connecting the fuse into the protected circuit. An auxiliary winding is helically wound over a portion of the length of the spider and has gap electrodes connected at each end. The gap electrodes are positioned adjacent the main element and are separated therefrom by a porous fiberglass member. A radially outwardly extending mica barrier is helically wound around the spider to extend between adjacent portions of the fusible element. The barrier is attached to the spider with a heat resistant adhesive, and the auxiliary elements are imbedded in the adhesive along a portion of its length.

3,733,573

POTENTIOMETER CONTACT SPRINGS

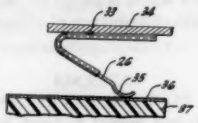
Frank L. Dieterich, 3979 East Boulevard, Los Angeles, Calif.

Continuation-in-part of Ser. No. 728,683, May 13, 1968, Pat. No. 3,579,822. This application May 24, 1971, Ser. No. 146,360

Int. Cl. H01c *1/12*

U.S. Cl. 338—202 **17 Claims**

A method of manufacturing miniature potentiometer contact springs by winding a substantial length coil of a single layer of fine, heat-treatable precious metal alloy wire on a generally cylindrical form, masking spaced strips longitudinally of the wire coil, plating the wire coil between the masked strips, removing the strips and cutting the strip-plated wire band from the mandrel as a sheet, cutting the wire sheet to produce contact strip blanks of various forms severable into individual contacts. A multi-layer masking system is used to photographically define the spaced strips. An adherent support about the wire coil permits the coil to be removed before masking and processed in sheet form.



Contact springs using wire of a reduced lateral diameter are produced by flattening the wire prior to winding on the form.

3,733,574

MINIATURE TANDEM SPRING CLIPS

Ray R. Scoville, LaCanada, and Ralph R. Wells, Van Nuys, both of Calif., assignors to Vector Electronic Company, Sylmar, Calif.

Filed July 23, 1971, Ser. No. 165,567

Int. Cl. H01r *13/12, 13/20, 29/00*

U.S. Cl. 339—18 C **16 Claims**

A miniature electrical terminal adapted for use in breadboarding experimental circuits utilizing various electrical components, including dual-in-line-package integrated circuits, comprises a bifurcated metallic spring clip adapted to receive an electrical connector between the bifurcations thereof, and cooperating with a U-shaped resilient metallic shell covering the clip and having the sides of the shell connected to the tines of the clip to increase the wire diameter handling range of the composite terminal by a ratio of about 1 to 3 with provision for contactor insertion from both top and bottom. Multiple connection points are achieved by providing strips of inter-connected spring clips which are covered by a common shell; and such strips can be used individually as patch blocks for assembling any desired circuit, or can be mounted on or between perforated boards. Strips of the terminal can be disposed closely adjacent one another, in insulated relation, to provide a ground bus and a voltage strip closely adjacent to, or between, groups of other terminal strips adapted to receive electrical components and connections.

3,733,575

CLAMPING CONNECTOR FOR BUS BARS

Friedrich Gottschalk, and Otto Wildgruber, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Feb. 9, 1972, Ser. No. 224,692

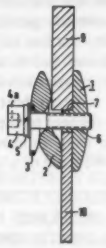
Claims priority, application Germany, Feb. 25, 1971, P 21 08 920.3

Int. Cl. H01r *13/60*

U.S. Cl. 339—22 B **6 Claims**

A clamping connector is provided for connecting bus bars, which includes a pressure plate having a planar contact with

the bus bars and a domed pressure piece which is formed so as to connect bus bars of different cross sections. The clamp bolt



or bolts are disposed within flanges of the pressure plate, which are arranged between the bus bars to be connected and which the bus bars engage on both sides.

3,733,576

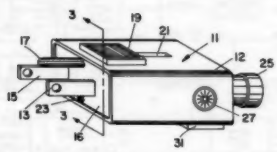
REVERSIBLE SAFETY GROUND PLUG

James R. Cooper, 125 Heil Drive, Gahanna, Ohio

Filed July 28, 1971, Ser. No. 166,705

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 P **11 Claims**



An electric plug having a pair of alternative retractable prongs for insertion into an electrical receptacle connected with a source of electrical power. The electrical plug is arranged with a pair of contact blades which are inserted into appropriate slots in the electrical terminal or receptacle and also with a pair of ground prongs, one of which can be inserted in the ground opening of the receptacle assuming it is a three opening receptacle. The two round ground plugs are retractable into the housing for the plug. Both of the ground plugs are connected to the ground of the appliance. The appliance may be a refrigerator, television set, recreational vehicle or other vehicle or power tool or any other type of appliance with which the plug is designed to cooperate. One of the two blade contacts is connected to the positive side of the appliance and the other blade contact is connected to the neutral or negative side of the appliance. The neutral lead has a Y formed therein and a lead is provided from the end of the Y through a resistance, a small neon light, and a buzzer and back to the ground terminal of the cable leading to the plug. Means are provided for manually retracting either of the ground prong contacts, the means consisting of a button attached to each one of the ground prongs.

3,733,577

ELECTRICAL TWO-PART CONNECTORS

Peter George Henry Hammond, Whitstable, England, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

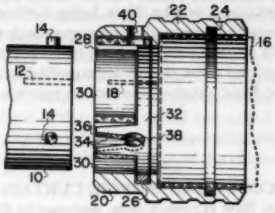
Filed Feb. 16, 1971, Ser. No. 115,475

Claims priority, application Great Britain, Feb. 16, 1970, 7,332/70; Nov. 20, 1970, 55,380/70

Int. Cl. H01r *13/54*

U.S. Cl. 339—91 R **5 Claims**

An improved two-part connector of which one part has one or more bayonet pins while the other part is fitted with a coupling ring adapted to telescope over the one part. The coupling ring has an internal annular groove which receives an annular spring strip in the form of a band having one or more



pairs of spring jaws facing forwardly of the coupling ring, the spring jaws being adapted to snap over the bayonet pin or pins of the one part when the two parts are mated.

3,733,578

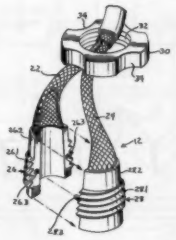
BATTERY CABLE

George H. Fouche, 111 Buxton Road, Falls Church, Va.

Filed Feb. 24, 1972, Ser. No. 228,890

Int. Cl. H01r *11/26*

U.S. Cl. 339—232 **8 Claims**



A battery cable is described having attachment means at one end thereof for attachment to a battery terminal comprising split cable ends and on the separate ends thereof mated and threaded fittings for making electrical contact with the battery terminal and a threaded ring encompassing said cable, with the threads thereof mated to said threaded fittings for securing said cable to the battery terminal. The attachment means are easily attached and detached to the battery terminal without need of tools.

3,733,579

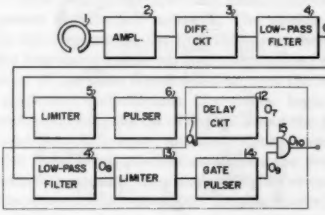
SENSING DEVICE FOR DIGITAL MAGNETIC MEMORY

Yoshihiro Onishi, Kokubunji, and Kazuo Nakagoshi, Odawara-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 25, 1972, Ser. No. 247,330

Int. Cl. G11b *5/02, 5/44*

U.S. Cl. 340—174.1 H **1 Claim**



A sensing device for a digital magnetic memory in which a signal sensed by a magnetic head is, after being differentiated

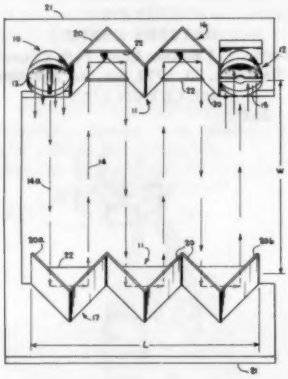
by a differentiation circuit, supplied to a first low-pass filter by which harmonic components of the differentiated signal are eliminated therefrom. This signal is then supplied to both means for generating a first pulse signal each time the signal traverses the zero level and a second low-pass filter, the output signal of the second low-pass filter being further supplied to means for generating a second pulse signal each time the output signal of the second low-pass filter traverses the zero level. The first and second pulse signals are supplied to an AND gate to produce the logic product thereof to provide an inherent peak signal.

3,733,580

ACOUSTICAL SENSING CURTAIN

Basil B. Beeken, New Haven, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 22, 1970, Ser. No. 100,686
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **9 Claims**



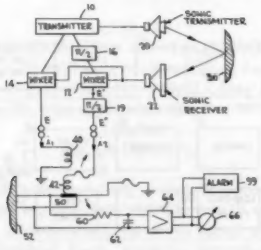
A collimated acoustical beam is propagated along a tortuous path by being successively reflected back and forth across a given field so that the successive path portions compositely define a substantially continuous acoustical sensing curtain; said beam being adapted to control an acoustically sensitive device. When an object to be sensed penetrates said curtain, at any point in the latter, said beam will be momentarily interrupted and a resultant output signal will thereby be generated by said acoustically sensitive device.

3,733,581

ACOUSTIC DOPPLER WAVE RECOGNITION

Henry P. Kalmus, 3000 University Terrace, N.W., Washington, D.C.

Filed Aug. 17, 1971, Ser. No. 172,460
Int. Cl. G01s *9/66*; G08f *13/16*
U.S. Cl. 340—1 R **13 Claims**



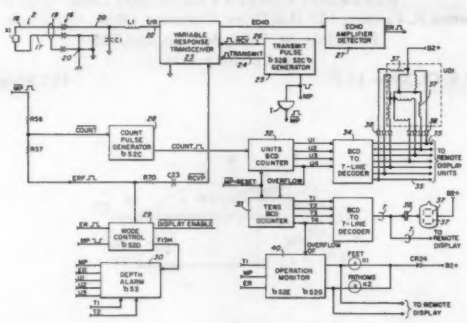
A moving body indicator for detecting movement of bodies in the presence of clutter noise which utilizes ultrasonic waves as a communicating means and a metallized foil electret transducer as a receiver and/or transmitter. The system uses the Doppler phenomenon to generate a signal that is a function of the relative velocity between the transmitter and the body. Another signal is simultaneously generated that is also a function of the relative velocity but has its phase shifted by a fixed amount. The two signals are fed to a correlator which will produce a voltage that is proportional to the velocity of the body and whose polarity is dependent on the direction of the velocity of the body with respect to the body indicator system. The voltage signal is also used to actuate an alarm as an indicator of intrusion or movement of a body.

3,733,582

DIGITAL DEPTH SOUNDER

Calvert F. Eck, Osterville, and Howard H. Hill, Pocasset, both of Mass., assignors to Datamarine International, Inc., Pocasset, Mass.

Filed Feb. 25, 1971, Ser. No. 118,731
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **16 Claims**



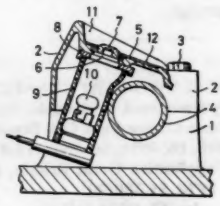
A digital depth sounder in which a pulse of radiant energy is directed towards a reflecting object, and reflection is detected by a receiver, wherein the time between the transmitted and received pulses are measured as an indication of the distance to the reflector, and in which both the gain of the receiver and the power output of the transmitter are regulated in accordance with the strength of the received reflection.

3,733,583

INDICATOR LAMP SUPPORT APPARATUS FOR A MOTORIZED TWO WHEEL VEHICLE

Kiyoshi Ukai, Iruma-gun, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1971, Ser. No. 195,626
Claims priority, application Japan, Nov. 26, 1970, 45/117611
Int. Cl. B60q *1/00*, *3/00*
U.S. Cl. 240—7.1 R **5 Claims**



Indicator lights for the operating condition of various parts of a motorized two-wheel vehicle are provided at the flat

upper surface of a support assembly for a steering handle of the vehicle. The support assembly comprises a lower member fixed to the front fork of the vehicle and an upper member detachably connected to the lower member. The flat surface is formed on the upper portion of the upper member and lamp assemblies for the lights are mounted in tubular holders attached to the upper member below apertures in the upper member through which the condition of the lamps is visible to the driver.

3,733,584

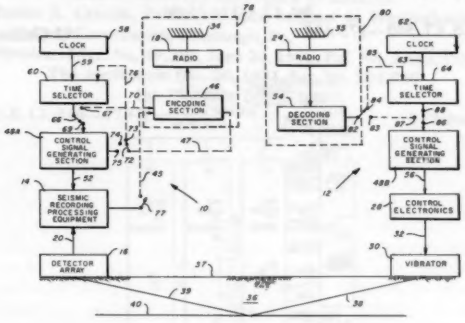
SYSTEM FOR REMOTELY CONTROLLING AND ACTIVATING A SEISMIC VIBRATOR

Charles R. Pelton, and Kim L. Mitchell, both of Ponca City, Okla., assignors to Pelton Company, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 110,872, Jan. 29, 1971. This application Mar. 3, 1971, Ser. No. 115,616

Int. Cl. G01v *1/02*

U.S. Cl. 340—15.5 TG **12 Claims**



This invention is applicable to seismic prospecting in which a vibrator is used as the source of seismic waves, and the seismic waves are detected, recorded and processed at a recording point remote from the vibrator, after passing through the earth. Means are provided at the vibrators and at the recording point for generating identical unique signals for controlling the vibrator and processing the recorded data. Precise clock and control means at the vibrator and recording point, after being synchronized, are used to control the simultaneous generation of the unique signals.

3,733,585

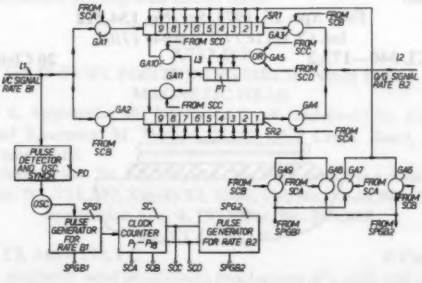
SYSTEMS FOR DETECTING ERRORS IN A DIGITAL TRANSMISSION CHANNEL

David Merlo, Hatfield, England, assignor to The Post Office, London, England

Filed June 7, 1971, Ser. No. 150,659

Int. Cl. G08c *25/00*

U.S. Cl. 340—146.1 D **5 Claims**



A system for detecting transmission errors arising in a digital transmission channel in which digits of a predetermined multidigit check signal not related to the information digits, are inserted successively after respective groups of information digits before transmission. After transmission the digits of the check signal are extracted and compared with the predetermined check signal, errors extracted indicating malfunctioning of the channel and loss of alignment of the check signal extraction. If the extraction of the check signal digits is out of alignment with the structure of the digital information after transmission, the rate of occurence of errors will be very high, and the detection of a very high error rate can be used to effect alignment of the check signal extraction with the structure of the digital information after transmission. A lower error rate indicates malfunctioning of the channel.

3,733,586

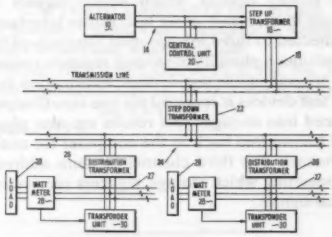
METER INTERROGATION SYSTEM HAVING STROBE LOGIC CONTROL

Joe F. Lusk, Medford; William H. Rood, and Herbert L. Feldman, both of Acton, all of Mass., assignors to General Public Utilities Corporation, New York, N.Y.

Continuation of Ser. No. 53,623, July 9, 1970. This application Mar. 14, 1972, Ser. No. 234,670

Int. Cl. H04q *9/00*

U.S. Cl. 340—151 R **28 Claims**



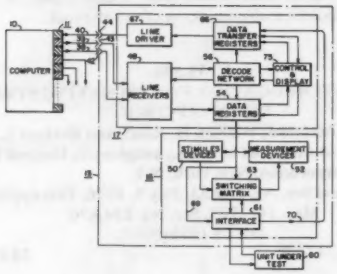
A system adapted for connection to a polyphase power distribution network to interrogate a plurality of separate watt meters and store respective readings from the watt meters. The system comprises a central control unit coupled to the power distribution network for storing a plurality of separate meter identification codes each including a group of binary coded bits and means for serially sending the bits including means for modulating a signal on said power distribution network of fixed time duration and indicative of the binary state of each bit of said group. A plurality of meter transponder units are each coupled respectively to the plurality of watt meters for demodulating the signal impressed on the power distribution network and identifying the transmitted group of binary codes bits as its own predetermined identity code.

In one embodiment of the invention, the transmitted identity code is sequentially stored in a register and a variable strobe logic unit is provided for entering each received bit into this register at a time dependent upon the maximum delay of a particular power distribution network. The strobe logic includes means for determining the time difference between the receipt of the beginning of the bit over the shortest path, and the termination of the same transmitted bit over the maximum path. In a preferred embodiment, the strobe logic also includes means for strobing the bit of data at about the middle of the determined time difference, and means for preventing the subsequent bit from being strobed until after the determined time difference has elapsed, thus preventing an erroneous bit sensing due to system delay variations. Similar strobe logic can also be provided to compensate for system delay variations when transmitting the binary coded reading from the identified transponder unit to the central control unit.

3,733,587
UNIVERSAL BUFFER INTERFACE FOR COMPUTER CONTROLLED TEST SYSTEMS

Raymond A. Lloyd, Laurel; Emil D. Arle, Fallston; Thomas A. Keller, Randallstown, and Robert Martinez, Baltimore, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1971, Ser. No. 141,640
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **7 Claims**

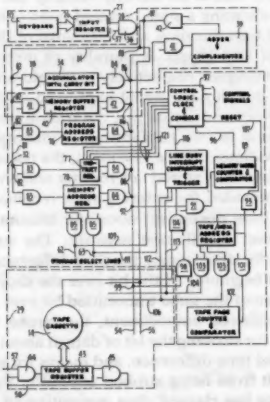


A testing system wherein a digital computer controls programmable testing devices which supply signals to, and receive signals from, a unit under test. Buffer interface equipment is connected to three input/output channels of the computer and includes a plurality of storage registers connected to the various programmable test devices. Information to be supplied to the test devices is received via one input/output channel and placed into storage. Test results are also placed into storage and transmitted back to the computer for analysis via a second channel. The third channel contains address information for selecting which storage registers receive or transmit the digital signals.

3,733,588
DIGITAL COMPUTER HAVING A PLURALITY OF SERIAL STORAGE DEVICES FOR CENTRAL MEMORY

Richard W. Conn, Livermore, Calif., assignor to Michael C. Zimmerman, Palo Alta, Calif., a part interest

Filed May 17, 1971, Ser. No. 144,299
Int. Cl. G06f *15/02*, *13/02*
U.S. Cl. 340—172.5 **16 Claims**

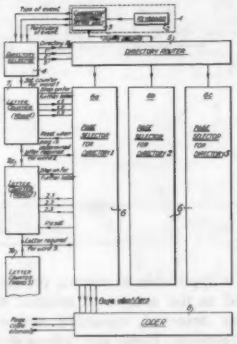


A small digital computer is described having a unique memory configuration which makes the computer quite suitable for highly interactive uses and yet places it in a price range similar to that of an electric desk calculator. The computer includes an input keyboard arrangement enabling an operator to directly deliver data to the computer, as well as a processor for manipulating data. The central memory is made up of four magnetostrictive delay lines, and secondary storage is provided in the form of a tape cassette. The control unit for directing operation of the computer is adapted to transfer data between one of the delay lines of central memory and the secondary storage at the same time data is being directed between another one of the storage devices and the processor for manipulation.

3,733,589
DATA LOCATING DEVICE

Thomas Raymond Thompson, Rickmansworth, England, assignor to Shell-Mex and B. P. Limited, London, England

Filed Sept. 15, 1970, Ser. No. 72,261
Claims priority, application Great Britain, Sept. 15, 1969, 45,338/69
Int. Cl. G11c *15/00*
U.S. Cl. 340—173 AM **12 Claims**

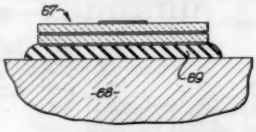


A data locating device for locating specific data from a store of data organized under a plurality of keywords arranged in a predetermined sequence, the device comprising apparatus for producing a plurality of electrical signals representing at least two successive characters of a keyword under which the said specific data is held in said data store, and apparatus for combining the electrical signals and, responsive to said combination, for producing a group of electrical signals representative of the location of the said specific data in said data store.

3,733,590
OPTIMUM ELECTRODE CONFIGURATION CERAMIC MEMORIES WITH CERAMIC MOTOR ELEMENT AND MECHANICAL DAMPING

Alvin B. Kaufman, 22420 Philiprimm Street, Woodland Hills, Calif.

Filed Apr. 15, 1971, Ser. No. 134,212
Int. Cl. G11c *11/22*; H04r *17/00*
U.S. Cl. 340—173.2 **26 Claims**



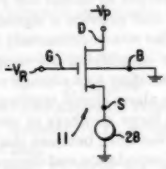
Ceramic memories utilize an electrostrictive ceramic motor element mechanically bonded to a ferroelectric ceramic

memory element. Signal or "bit" electrodes are disposed over only the portion of the memory element to which maximum stress is transmitted by the motor element. In disc shaped embodiments, the bit electrodes are restricted to the central 50 percent of the memory device surface; in rectangular embodiments, the bit electrodes are disposed along the longitudinal centerline of the memory element and have a width less than one-half that of the memory device. In other embodiments, a portion of the memory element ceramic slab performs a motor function, or alternatively, dual motor elements are employed. To prevent ringing, each memory device may employ a damping electrode fabricated of an electrically conductive alloy exhibiting mechanical damping capacity. Alternatively, the device may be mounted to a substrate by means of an energy absorbing material, or may have an edge mechanically clamped or adhesively bonded to the substrate to prevent ringing.

3,733,591
NON-VOLATILE MEMORY ELEMENT

James R. Cricchi, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 49,398, June 24, 1970, Pat. No. 3,683,335. This application Dec. 20, 1971, Ser. No. 209,956
Int. Cl. G11c *7/00, 11/40*
U.S. Cl. 340—173 R **2 Claims**



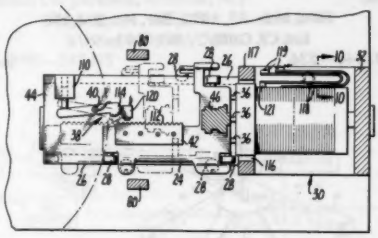
A metal insulated semiconductor (MIS) field effect transistor is operated in a gate-to-source mode. The voltage threshold of conduction of the transistor is variable and is switched between two different stable threshold conditions in response to application of corresponding, different predetermined values of polarizing voltages applied between the gate and source terminals. Determination of the threshold condition to which the transistor is switched is effected by applying a read voltage to the gate of the transistor intermediate the voltage threshold levels and sensing the current flow between the source and drain. Since the sense voltage is less than the polarizing voltage for either condition of switching, the preset threshold condition is maintained. The transistor therefore exhibits a non-volatile memory capability. A plurality of the transistors are employed in a memory array and may be readily fabricated in integrated circuit form.

3,733,592
SPLIT PAWL POSITIONING MECHANISM FOR A MAGNETIC HEAD

Roy A. Applequist, 401 Edgewood Road, Redwood City, Calif., and Laurence M. Wilson, 21850 Bear Creek Road, Los Gatos, Calif.

Division of Ser. No. 18,390, Feb. 26, 1970, which is a division of Ser. No. 715,237, March 22, 1968, Pat. No. 3,544,980. This application Aug. 4, 1971, Ser. No. 168,888
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 C **6 Claims**

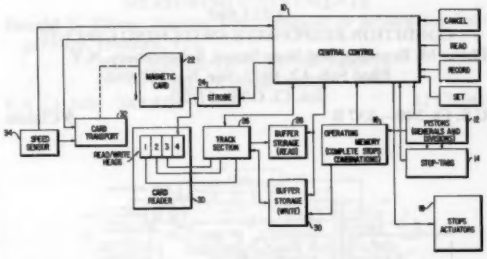
A magnetic head positioning mechanism of a rack and pawl type wherein the pawl consists of two pawls offset by one half of the tooth pitch from each other thereby allowing a finer positioning of the head. Additionally there is circuitry for controlling the positioning mechanism consisting of a present address register, a new address register and a servo amplifier responsive to the difference in the addresses and the velocity of the positioning member.



3,733,593
CAPTURE COMBINATION SYSTEM

Laszlo A. Molnar, Tustin, Calif., assignor to North American Rockwell Corporation, Anaheim, Calif.

Division of Ser. No. 79,612, Oct. 9, 1970, Pat. No. 3,700,784. This application May 16, 1972, Ser. No. 253,902
Int. Cl. G06f *15/34*
U.S. Cl. 340—172.5 **7 Claims**

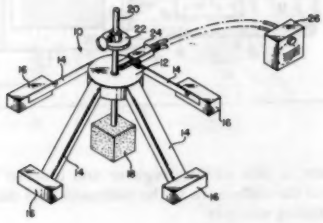


A capture combination system for use in an electronic organ provides rapid reprogramming of the entire combination memory while permitting manual selection of desired stop combinations at any time. Desired stop combinations are selected for each piston and set into the working memory of the system. These combinations, upon command, are transferred from the working memory to a storage or external memory. A full combination of stop settings may be stored on the external memory by transfer from the internal memory, and a number of such external memories corresponding to a number of different full combinations of stop settings thus may be prepared and, subsequently, selectively presented to the system as desired. The combination settings from the external memory are transferred upon command into the internal working memory for establishing the desired combination of stop settings therein. Transfer into or out of the external memory requires but a few seconds. Whenever desired, the working memory may be altered to modify one or more stop combinations, whether set manually, or entered therein from the external memory and, in the latter case, while retaining the combinations recorded in the external memory.

3,733,594
ALARM APPARATUS FOR DETECTING AND INDICATING OIL SLICKS

George Otto Orth, Jr., 10612 Riviera Place N.E., Seattle, Wash.

Filed Mar. 13, 1972, Ser. No. 234,296
Int. Cl. G08b 21/00; G01n 9/18
U.S. Cl. 340—236 9 Claims

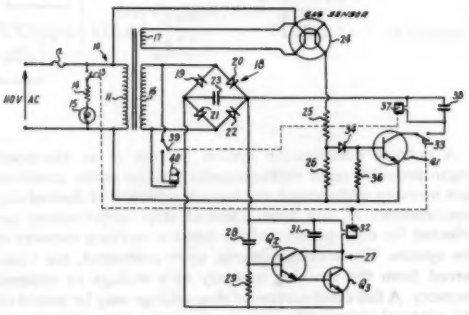


Oil slicks floating on the surface of a body of water are detected by a device which floats on the body of water. The device incorporates therein a hydrophobic oil absorbent material which also floats on the surface of the water. On contact with the oil of an oil slick, the hydrophobic oil absorbent material absorbs the oil and sinks into the water. When the float of hydrophobic absorbent material sinks to a predetermined depth in the water, an alarm signaling device is actuated to indicate the presence of the oil slick.

3,733,595
CONDITION RESPONSIVE SWITCHING CIRCUIT

Elmer M. Benedict, 506 State Street, Schenectady, N.Y.

Filed Feb. 12, 1971, Ser. No. 117,968
Int. Cl. G08b 21/00
U.S. Cl. 340—237 R 9 Claims

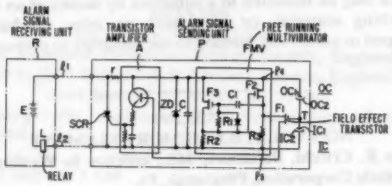


A circuit which actuates a visible or audible alarm in response to the reception of dangerous fluids such as smoke, fumes, or gas. The circuit includes a sensor which changes internal resistance when the fluid to be detected is present in the environment surrounding the sensor. The change of the sensor actuates a switching or trigger circuit which results in the sounding of an audible alarm or the lighting of a visual alarm or both. A delay circuit which maintains the sensor circuitry in an unenergized condition until the system stabilizes after power is first applied is also provided to prevent spurious alarms.

3,733,596
ALARM CIRCUIT

Takeo Arima, Setagaya-ku, Tokyo-to, Japan, assignor to Tokyo Hachiki Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 887,485, Dec. 23, 1969, abandoned. This application May 16, 1972, Ser. No. 253,868
Claims priority, application Japan, Dec. 26, 1968, 43/95614; May 3, 1969, 44/34012
Int. Cl. G08b 17/10
U.S. Cl. 340—237 S 9 Claims

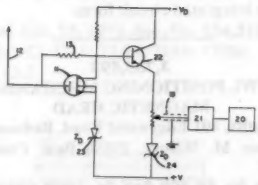


An alarm system to detect combustion products such as smoke, gas and the like, has one or more alarm signal sending units and an alarm signal receiving unit interconnected by wiring to the sending units. Each alarm signal sending unit has a sensing or response element to detect the presence of vapors or smoke and the like and provide a signal; the sending unit also includes an amplifier non-continuously brought to its current-carrying state for amplifying an output signal of the response elements responding to a change of the surrounding physical condition. The alarm signal sending units are suitable for being connected in large numbers in parallel with a common alarm signal receiver unit, because the amplifier in each sending unit has a high impedance and dissipates low power. A smoke-sensing element of the ion type and necessitating no repeater is expediently included in the alarm signal sending device.

3,733,597
PROXIMITY DETECTOR AND ALARM UTILIZING FIELD EFFECT TRANSISTORS

Gerald F. Healey, Seaside Heights, and Joseph C. Nirschl, West Long Beach, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 29, 1969, Ser. No. 854,084
Int. Cl. G08b 13/26
U.S. Cl. 340—258 D 7 Claims

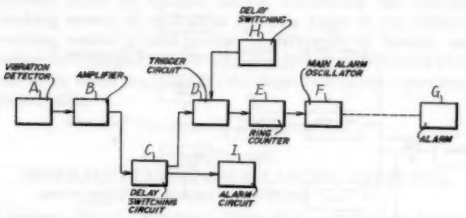


A proximity detector and alarm in which an antenna is connected to the gate of a metal oxide semiconductor field effect transistor (MOSFET) which causes a silicon controlled switch (SCS) to trigger a blocking oscillator.

3,733,598
VIBRATION-RESPONSIVE APPARATUS

Tomezo Kato, 172 Motoderakoji, Sendai, Japan

Continuation of Ser. No. 887,211, Dec. 22, 1969, abandoned.
This application Dec. 22, 1971, Ser. No. 210,994
Claims priority, application Japan, Dec. 27, 1968, 44/127; Dec. 27, 1968, 44/129
Int. Cl. G08b *13/16*
U.S. Cl. 340—261 4 Claims

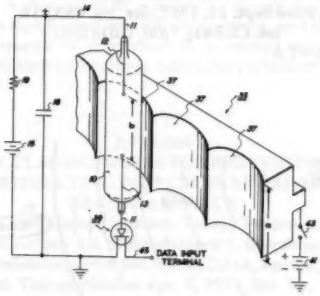


A vibration-responsive apparatus having means for detecting a vibration and producing a signal in response to the detected vibration, and electric circuit means operating in response to the vibration when it lasts for more than a certain period of time and the signal corresponding thereto is produced a predetermined number of times, the electric circuit means being adapted to actuate a desired device connected thereto.

3,733,599
TRIGGERING APPARATUS FOR A FLASH LAMP

Louis J. Fantozzi, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 22, 1970, Ser. No. 74,437
Int. Cl. G08b *5/38*
U.S. Cl. 340—343 4 Claims

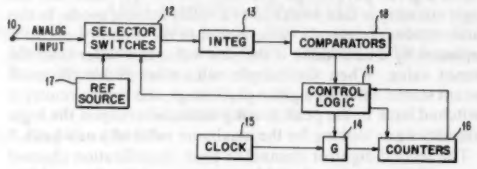


Apparatus for triggering a flash lamp. The flash lamp is positioned in a groove formed on a conductive member. The width of the conductive member is selected to be at least equal to the space between the lamp electrodes. In a first embodiment, a voltage of an amplitude sufficient to trigger the flash lamp is applied to the conductive member whereby the flash lamp is caused to emit radiation of a desired wave-length. In a second embodiment, a plurality of flash lamps are positioned in contact with a plurality of grooves formed on the conductive member. A voltage of an amplitude sufficient to trigger all of the flash lamps is applied to the conductive member. Selected ones of said plurality of flash lamps are triggered by applying a signal to switch means connected in the electrode circuits of the selected flash lamps.

3,733,600
ANALOG-TO-DIGITAL CONVERTER CIRCUITS

George A. Hellwarth, Deerfield Beach, and James E. Milton, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1971, Ser. No. 131,748
Int. Cl. H03k *13/02, 13/20*
U.S. Cl. 340—347 NT 5 Claims

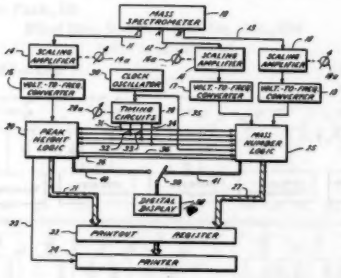


Time delays associated with switching controls of analog-to-digital converter circuits permit switching transients to be blocked from reducing conversion accuracy. The time delays allow switching to be performed while normal conversion operations are suspended. Appropriate converter components are maintained with quiescent operating levels between conversion cycles so that drifting of those components during conversion cycles is minimized. At least the final portion of a simulated conversion cycle is used as a precedent to each conversion cycle so that the initiating and completing conversion levels are maintained equivalent. A precision semi-conductor switch effects on-off switching with constant resistance by referencing the switch control signals to the switch input level.

3,733,601
DIGITAL READOUT SYSTEM FOR ANALYTICAL MEASURING INSTRUMENTS

Donald L. Oliver, Austin, Tex., assignor to Infotronics Corporation, Houston, Tex.

Filed May 20, 1969, Ser. No. 826,096
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD 21 Claims



A digital readout system for use with analytical measuring instruments, such as mass spectrometers, which produce a fluctuating analog measurement signal in response to a varying control effect. The system includes a pair of digitizer channels, one for detecting and digitizing the maximum values of peaks in the analog measurement signal and the other for processing and digitizing signals which identify these maximum values in terms of a parameter related to the magnitude of the varying control effect.

As applied to a mass spectrometer, the maximum value or peak height measurement is accomplished by utilizing a voltage-to-frequency converter to produce a pulse train having a frequency or repetition rate directly proportional to the am-

plitude of the spectrometer ion current signal. The output of the converter is fed to digital logic circuitry wherein it is periodically sampled and analyzed. In particular, the value of each sample is compared with the last sample that was stored in a memory circuit and the logic circuitry automatically makes decisions as to whether the sample in the memory circuit should be retained, replaced by the new value or read out. In a peak sensing mode, the stored sample is replaced by the new value if the new value is larger. The most recent sample stored in the memory circuit is read out whenever a new sample is a given percentage less than the stored value and the logic circuitry is then switched to a valley sensing mode. In this latter mode, the sample value stored in the memory circuit is replaced by a new value if the new value is smaller than the stored value. When the sample value rises above the most recent stored value by a given percentage, the logic circuitry is switched back to the peak sensing mode, whereupon the logic circuitry starts looking for the maximum value of a new peak.

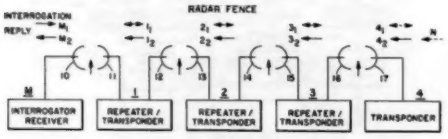
The second digitizer channel or peak identification channel is provided with six selectable operating modes for enabling selection of a digital readout that is related to one or more of three parameters. These parameters are the spectrometer accelerating voltage, the spectrometer magnetic field intensity and the elapsed time of the control effect variation. In all cases, the value that was present when the maximum value of a peak occurred will be read out. The first two operating modes enable either the accelerating voltage or the magnetic field intensity to be read out directly. The next three modes utilize computing circuits for computing and reading out mass number values as determined from either the accelerating voltage or the magnetic field intensity or both. The sixth mode provides an elapsed time readout expressed in terms of the number of sample intervals that have occurred.

3,733,602

MICROWAVE INTRUSION DETECTING SYSTEM AND APPARATUS

Virgil A. Cuckler, Scottsdale, and Laverne A. Wente, Tempe, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 20, 1971, Ser. No. 145,169
Int. Cl. G08b *13/24*
U.S. Cl. 343—5 PD **15 Claims**



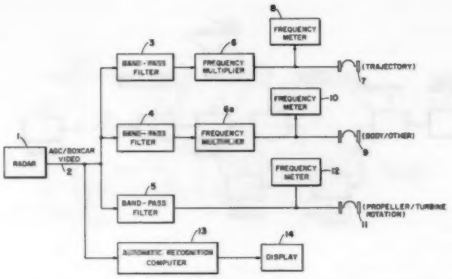
A digital microwave intrusion detecting system and apparatus is disclosed wherein a plurality of repeater/transponders with receiving and transmitting antennas define a perimeter and in response to each interrogation pulse sent down the perimeter reply pulses are received back at the monitoring location corresponding in number to the last transponder to send a reply. The location of the perimeter violation is defined by the last transponder to reply to an interrogation pulse. If a certain number of replies, for example one, are not received back from all transponders in response to an interrogation pulse a warning signal is given and if a different number of replies are not received back, as for example, two in succession, an alarm signal is given that the perimeter has been violated.

3,733,603

RADAR TARGET IDENTIFICATION SYSTEM

Stephen L. Johnston, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 31, 1968, Ser. No. 749,538
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 SA **1 Claim**



This system utilizes the low frequency modulations of the signal from a radar which result from target scintillation and target motion. Outputs are provided for three types of identification — aural, frequency meter, and automatic recognition computer. A frequency multiplier may be used with the aural and frequency meter outputs.

3,733,604

AIRCRAFT GUIDANCE SYSTEM

Harry B. Smith, Catonsville, Md., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa.

Filed Sept. 11, 1957, Ser. No. 683,918
Int. Cl. F41g *7/00*; G01s *9/02*
U.S. Cl. 343—7 A **8 Claims**

6. In an aircraft guidance system in which a guided aircraft is launched and thereafter guided by pulses of radio frequency energy transmitted from a pulse Doppler radar system, the combination of a directional antenna for said pulse Doppler system, means for driving said antenna through a search pattern, means in said pulse Doppler system for tracking a target in range, means in said pulse Doppler system for tracking a target in velocity, a guided aircraft, having a rearward-looking antenna on said guided aircraft for receiving energy transmitted directly from the antenna of said pulse Doppler radar after the guided aircraft is launched and traveling along the beam of energy transmitted by the pulse Doppler antenna, a

forward-looking antenna on said guided aircraft for receiving transmitted energy from said pulse Doppler radar which is reflected from said target means in said guided aircraft for deriving an output proportional to the difference in frequencies received by the two antennas on said guided aircraft, a velocity tracking circuit in said aircraft responsive to the output of said deriving means, means responsive to the output of said tracking circuit for varying the angular position of said forward-looking antenna, means connecting the antenna driving means of said pulse Doppler radar to the means for varying the angular position of said guided aircraft forward-looking antenna prior to launch, means connecting the velocity tracking means of said pulse Doppler radar to the velocity tracking means in said guided aircraft prior to launch, and means for increasing the illuminating power of said pulse Doppler radar when the range of said target falls below a predetermined value.

3,733,605

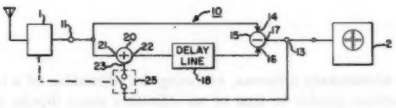
INTERRUPTED FEEDBACK CANCELLATION IN A RADAR SYSTEM

Laurence Oliver Osterman, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,325

Int. Cl. G01s *9/42*

U.S. Cl. 343—7.7 **8 Claims**



In a radar system a canceller circuit including in one form a single delay means which produces an output signal having an order of cancellation equal to that of the canceller circuit using two delay means. Undelayed and delayed video or intermediate frequency inputs are coupled from a signal input to a subtractor. A first input of a summing circuit is connected between the signal input and the delay means, and the output of the subtractor is connected to a second input of the summing junction on alternate interpulse periods of the radar system.

3,733,606

CAMOUFLAGING MEANS FOR PREVENTING OR OBSTRUCTING DETECTION BY RADAR RECONNAISSANCE

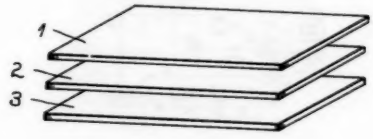
Sven-Goran Johansson, Upplands Vasby, Sweden, assignor to Barracudavwrken AB, Skarsnasvagen 4, Djursholm, Sweden

Continuation-in-part of Ser. No. 812,414, April 1, 1969, abandoned. This application Apr. 6, 1971, Ser. No. 131,652

Claims priority, application Sweden, Apr. 1, 1968, 4293/68; Aug. 13, 1968, 10897/68

Int. Cl. G01s *7/36*

U.S. Cl. 343—18 A **14 Claims**



Camouflage means for minimizing detection of objects by radar reconnaissance consisting of a multi-layered material both absorbing and reflecting radar signals and wherein at least one layer is a thin inhomogeneous electrically conductive film having a surface resistivity such as to establish reflection for a portion of the incident radar power. The conductive film may take the form of metallic grid which may be regular or irregular, metal or metallized fibers and fibrils, flakes, or a layer of colloidal, conductive particles.

3,733,607

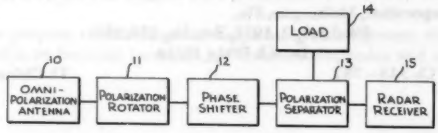
ANTI-JAMMING APPARATUS

Edwin N. Bobrow, Palos Verdes Estates, and Lawrence C. Murdock, Torrance, both of Calif., assignors to Thompson Ramo Wooldridge, Inc., Cleveland, Ohio

Filed Oct. 3, 1958, Ser. No. 766,171

Int. Cl. G01s *7/36*

U.S. Cl. 343—100 PE **13 Claims**



A linearly polarized wanted signal is separated from a non-linearly polarized unwanted signal by transforming the wanted signal to a non-linearly polarized signal and the unwanted signal to a linearly polarized signal and transmitting these signals to a polarized filter to pass only t he component of the wanted signal orthogonal to the unwanted signal.

3,733,608

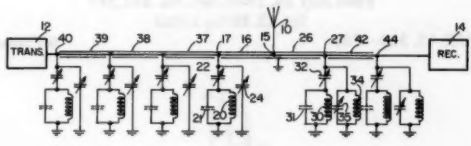
CIRCUIT FOR COUPLING RADIO RECEIVER AND RADIO TRANSMITTER TO A COMMON ANTENNA FOR DUPLEX OPERATION

Maynard H. McGhay, Schaumburg, and Demetrios G. Afendras, Melrose Park, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 9, 1971, Ser. No. 206,484

Int. Cl. H04l *5/08*

U.S. Cl. 343—180 **14 Claims**



Antenna coupling circuit for duplex radio transmission and reception by use of a common antenna (duplexer), including plurality of helical resonator sections provided within conductive enclosures in a conductive housing. A helical winding is provided in each enclosure having one end connected to the housing, and an adjustable conductive stud forms a capacitor with the other end of the winding. The winding and enclosure form a parallel tuned resonator, and the series capacitor forms therewith a series tuned circuit. One series tuned circuit at the receiver frequency is coupled to the antenna by a transmission

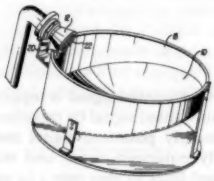
line having a length equal to an odd multiple of a quarter wave length at the transmitter frequency, and this junction is connected to the transmitter through a circuit which may include additional tuned circuits. A second series tuned circuit at the transmitter frequency is coupled to the antenna by a transmission line having a length equal to an odd multiple of a quarter wave length at the receiver frequency, and this junction is connected to the receiver through a circuit which may include additional tuned circuits. A reactance may be connected in parallel with the first series tuned circuit to provide an anti-resonant circuit at the transmitter frequency, and a different reactance may be connected in parallel with the second tuned circuit to provide an anti-resonant circuit at the receiver frequency. Additional resonator sections can be connected in the transmitter and/or receiver branches of the circuit.

3,733,609

SHROUDED OFFSET PARABOLIC REFLECTOR ANTENNA

Homer E. Bartlett, Melbourne, Fla., assignor to Radiation Incorporation, Melbourne, Fla.

Filed July 2, 1971, Ser. No. 159,352
Int. Cl. H01q *19/14*
U.S. Cl. 343—782 **11 Claims**



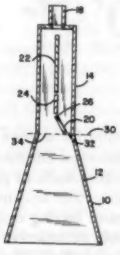
A reflector antenna has a reflector with an offset feed. The reflector is partially encompassed by a shroud which may be reflecting, absorbing, or both, to energy radiated by the feed. The shroud is effective to block energy radiated by the feed that would otherwise spill over the edge of the reflector, only along a portion of the edge less than its entirety.

3,733,610

ELECTROMAGNETIC HORN WITH MOVEABLE VANE FOR GENERATING MONOPULSE RADIATION PATTERNS

Derling G. Killion, and Floyd B. Shacklock, both of San Diego, Calif., assignors to Ryan Aeronautical Company, San Diego, Calif.

Filed July 14, 1969, Ser. No. 841,357
Int. Cl. H01q *13/00*
U.S. Cl. 343—786 **6 Claims**



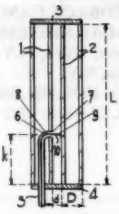
An electromagnetic horn with amplitude monopulse radiation patterns has a Magic Tee attached to a waveguide feeding the horn. The Magic Tee provides two signals that have displaced phase centers in the feeding waveguide. Each signal, whose phase center is displaced, provides a radiation pattern whose maximum radiation is angularly skewed from the axis of the horn. A rotationally variable septum provides an angular rotation of both radiation patterns in such a manner as to rotate the reference axis, thereby scanning the monopulse antenna patterns.

3,733,611

RECTILINEAR POLARIZATION ANTENNAS

Henri Becavin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed June 29, 1971, Ser. No. 157,966
Claims priority, application France, July 17, 1970, 7026431
Int. Cl. H01q *9/16*
U.S. Cl. 343—792 **9 Claims**



The elementary antenna, allowing the obtention of a radiation pattern similar to that of an infinitely short dipole in the E-plane comprises two metal tubes inserted between two plates closing off their ends. A coaxial cable passing through one of the tubes has its inner conductor connected to the outer surface of the other tube.

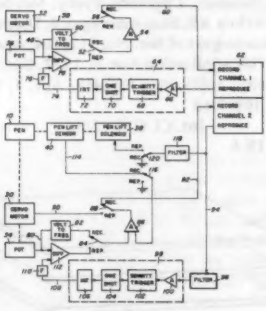
A four-tube arrangement allows the obtention of a radiation pattern such as provided by two crossed dipoles and may be used for radio-beacons.

3,733,612

SIGNATURE REPRODUCTION

Harvey L. Huston, Silver Spring, Md., and Donald K. Belcher, Gainesville, Fla., assignors to Signa-Signer, Inc., Silver Spring, Md.

Filed Mar. 30, 1971, Ser. No. 129,462
Int. Cl. G11b *31/00*
U.S. Cl. 346—33 MC **9 Claims**



The position of a pen or stylus with respect to a piece of paper is converted into two DC signals in a pair of potentiome-

ters which are mechanically linked to the pen support mechanism. The DC signals are then converted into AC signals which are recorded on magnetic tape. When the tape is played back, the AC signals are reconverted into DC voltages which drive a negative feedback servomechanism system and thereby reproduce a signature previously recorded on the magnetic tape.

3,733,613

ELECTRODE AND TERMINAL STRUCTURE FOR NON-IMPACT PRINTER

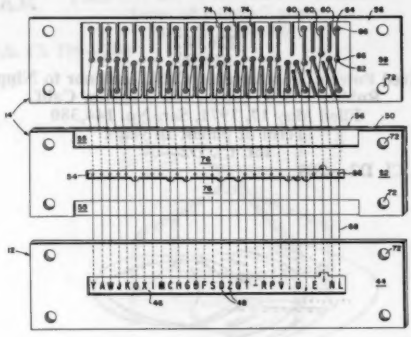
Paul L. Koch, Saugus, and James C. Maxwell, Winchester, both of Mass., assignors to The Carter'Ink Company, Cambridge, Mass.

Filed Aug. 16, 1971, Ser. No. 172,067

Int. Cl. G01d *15/06, 15/20*

U.S. Cl. 346—74 E **10 Claims**

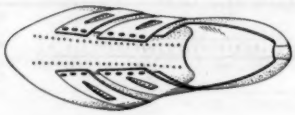
Printing means for high-speed non-impact printers of the type having character-shaped, pulsed electrodes. Mutually facing electrode and terminal sheets have insulating bases upon the nonfacing surfaces of which are disposed character electrodes and corresponding connection terminals. The respective electrodes and terminals are mutually connected by conductor leads extending through the sheets. Surrounding portions of the non-facing surfaces and portions of the facing surfaces extend about the electrodes and terminals and are electrically conductive and connectable to circuit means for the purpose of shielding and suppressing arcs between electrodes or between terminals, or between electrodes and terminals.



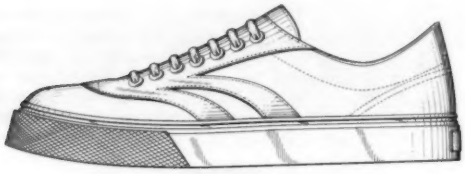
DESIGNS

MAY 15, 1973

226,882
SHOE
Alfred Powers, Los Angeles, Calif., assignor to Nippon Rubber U.S.A. Corp., Los Angeles, Calif.
Filed May 17, 1971, Ser. No. 144,380
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—268

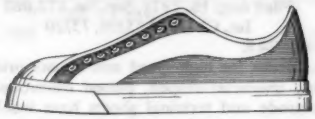


226,883
SHOE
Jaromir Babicka, Reisterstown, and Clarence E. Phillips, Taneytown, Md., assignors to Cambridge Rubber Company, Taneytown, Md.
Filed Nov. 4, 1971, Ser. No. 195,903
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



226,884
SHOE
Helge Persson, 6 Ekstubbevagen, S–260 40 Viken, Sweden
Filed Jan. 14, 1972, Ser. No. 218,046
Claims priority, application Sweden Nov. 3, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310

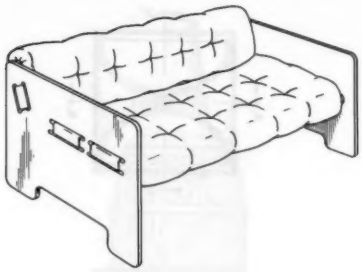
226,885
SHOE
George Philbrick McBarron, 105 Colonial Cove Drive, Hope Mills, N.C. 28348
Filed Apr. 26, 1972, Ser. No. 247,937
Term of patent 3½ years
Int. Cl. D2—*04*
U.S. Cl. D2—310



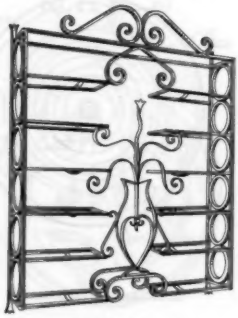
226,886
PAINT APPLICATOR
Anthony E. Codina, 2337 Cypress Ave., Lemon Grove, Calif. 92045
Filed July 19, 1971, Ser. No. 164,200
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38

226,887
CRIB
Robert Sterling Brunk, Rte. 2, Sugar Creek Road, P.O. Box 175B, Weaverville, N.C. 28787
Filed Mar. 27, 1972, Ser. No. 238,761
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—15

226,888
ARM LOUNGE SEAT OR THE LIKE
Stuart John Gilbert and Karen T. Gilbert, Constantine, Mich., assignors to Harter Corporation, Sturgis, Mich.
Filed June 4, 1970, Ser. No. 23,301
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—63



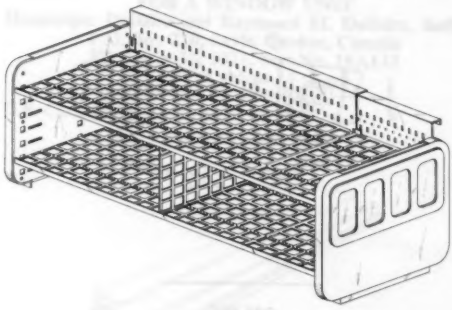
226,889
WINE RACK
Ernest A. Bauer, 21 Cliff St., Hastings-on-Hudson, N.Y. 10706
Filed July 21, 1971, Ser. No. 164,981
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



226,890
TABLE
Gary J. Neville, 458 Sycamore Road, Santa Monica, Calif. 90402
Filed Jan. 7, 1971, Ser. No. 104,839
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

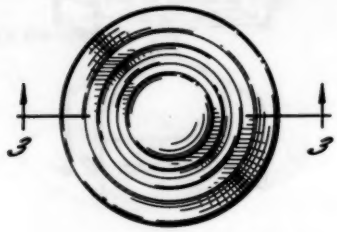
226,891
PEDESTAL STAND
Walter Gusdorf, 1042 Orchard Lakes, Creve Coeur, Mo. 63141
Filed Oct. 20, 1971, Ser. No. 191,152
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—181

226,892
MERCHANDISE DISPLAY MODULE
Michael Degennaro, New Rochelle, and Phillip Schatten, Spring Valley, N.Y., assignors to Jonathan Leigh Inc.
Filed Nov. 12, 1971, Ser. No. 198,493
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

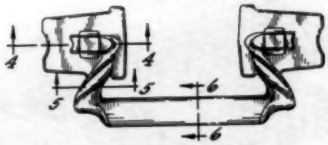


226,893
DEAD LOCK LEVER
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,905
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—137

226,894
KNOB
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 2, 1971, Ser. No. 204,412
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—144

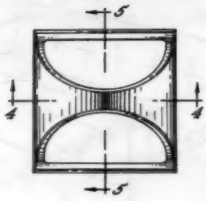


226,895
PULL
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 22, 1971, Ser. No. 211,166
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

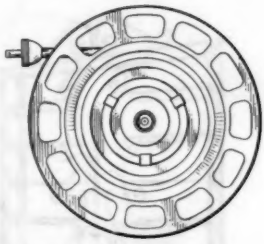


226,896
PULL
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Original design application Dec. 7, 1970, Ser. No. 26,332. Divided and this application Mar. 10, 1972, Ser. No. 233,848
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

226,897
PULL
Bruce N. Bingham, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 3, 1971, Ser. No. 204,795
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—173



226,898
ELECTRICAL CORD-REEL
Bernard J. Tamarin, Philadelphia, Pa., assignor to Vacuum Cleaner Corporation of America, Philadelphia, Pa.
Filed Apr. 6, 1972, Ser. No. 241,883
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—220

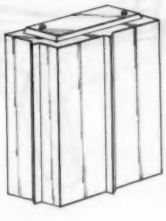


226,899
HOOK FOR SHOWER CURTAINS OR THE LIKE
Ned Strongin, Baldwin, N.Y., assignor to Heinz Nathanson Incorporated, New York, N.Y.
Filed Nov. 19, 1971, Ser. No. 200,660
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248

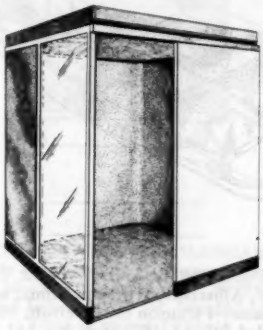
226,900
BOTTLE
Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611
Filed Jan. 20, 1971, Ser. No. 108,249
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28

226,901
CONTAINER FOR LIQUID PRODUCTS
Herbert W. Galer, Circleville, Ohio, assignor to United States Steel Corporation
Filed July 12, 1971, Ser. No. 161,411
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175

226,902
CONTAINER FOR LIQUIDS
Leard Evander Lisk, Jr., Summerfield, N.C., assignor to Lisk Enterprises Corporation, Greensboro, N.C.
Filed Oct. 8, 1971, Ser. No. 187,928
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—175

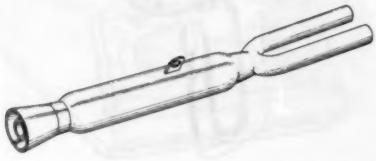


226,903
TELEPHONE BOOTH
Donald Michael Genaro, Haworth, N.J., John Niel McGarvey, Drexel Hill, Pa., and Frederick Allen Rosebrock, Greenfield, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed July 16, 1971, Ser. No. 163,556
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 L

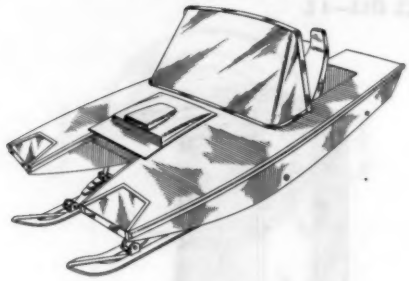


226,904
EXTRUDED PLASTIC MEETING RAIL FOR A WINDOW UNIT
Dominique Dallaire and Raymond M. Dallaire, both of P.O. Box 220, Levis, Quebec, Canada
Filed July 15, 1971, Ser. No. 163,123
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

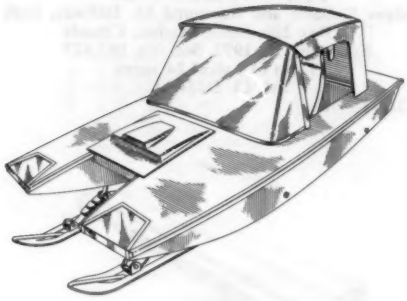
226,905
MUFFLER
Robert F. Buckalew and John D. Owens, both of 1859 Blake Ave., Los Angeles, Calif. 90039
Filed July 8, 1971, Ser. No. 160,998
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6 D



226,906
COMBINED SNOW AND WATER VEHICLE
Robert V. Albertson, Wayzata, Minn., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed July 12, 1971, Ser. No. 161,381
Term of patent 14 years
Int. Cl. D12—*14, 06*
U.S. Cl. D14—24

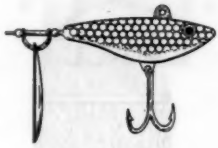


226,907
COMBINED SNOW AND WATER VEHICLE
Robert V. Albertson, Wayzata, Minn., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed July 12, 1971, Ser. No. 161,382
Term of patent 14 years
Int. Cl. D12—*14, 06*
U.S. Cl. D14—24

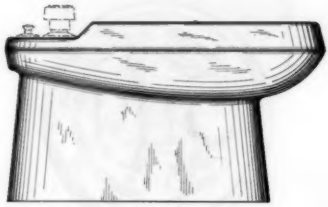


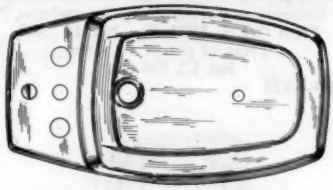
226,908
COMBINED DEFENSIVE WEAPON AND FLASHLIGHT
Max Tadlock, Santa Clara, Calif. (86 3rd St., P.O. Box AB, Los Altos, Calif. 94022)
Filed Oct. 4, 1971, Ser. No. 186,576
Term of patent 14 years
Int. Cl. D22—*02;* D26—*02*
U.S. Cl. D22—1

226,909
SPINNER SINKER FISHING LURE
George S. Perrin, Fort Smith, Ark., assignor to Plastics Research and Development Corporation, Fort Smith, Ark.
Filed May 19, 1972, Ser. No. 255,309
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

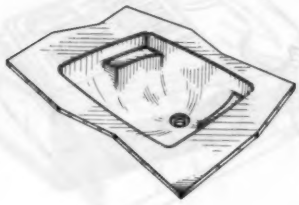


226,910
BIDET
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 16, 1971, Ser. No. 209,008
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—51



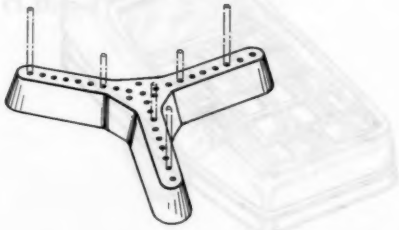


226,911
LAVATORY
Richard J. Ganger, Los Angeles, Calif., assignor to Gruber Systems, Inc., North Hollywood, Calif.
Filed Nov. 11, 1971, Ser. No. 198,049
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

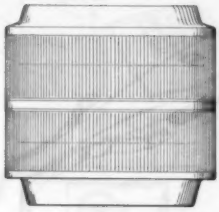


226,912
TOILET SEAT
Matthias Scherer, Trierer Strasse 40, Weiskirchen, Saar, Germany
Filed July 6, 1971, Ser. No. 160,247
Claims priority, application Germany Jan. 6, 1971
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71

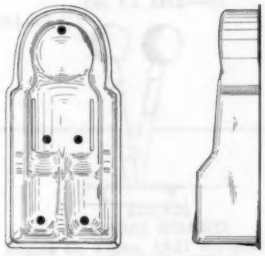
226,913
CERAMIC STILT FOR KILNS
Louis San Antonio, 96 Commodore St., Providence, R.I. 02904
Filed July 12, 1971, Ser. No. 161,399
Term of patent 14 years
Int. Cl. D23—*99*; D26—*01*
U.S. Cl. D23—82



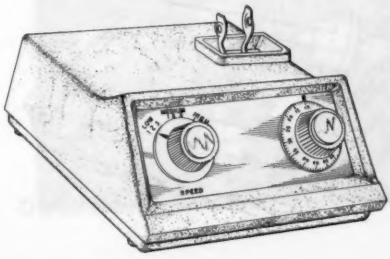
226,914
CASING FOR REFRIGERATION SYSTEM CONDENSING UNITS OR THE LIKE
Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 2, 1971, Ser. No. 168,517
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



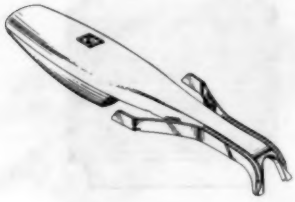
226,915
ORTHODONTIC CRADLEBOARD
Hal A. Huggins, 100 E. Cheyenne Road, Colorado Springs, Colo. 80906
Filed July 6, 1971, Ser. No. 160,248
Term of patent 14 years
Int. Cl. D24—*01*; D6—*01*
U.S. Cl. D24—1 B



226,916
DENTAL MATERIAL MIXER
Ronald C. Webb and Kenneth B. Wikel, York, Pa., assignors to Dentsply Research & Development Corp., Wilmington, Del.
Filed July 14, 1971, Ser. No. 162,761
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 A



226,917
COMBINED DENTAL FLOSS HOLDER AND APPLICATOR
Talmadge E. Foster, 6618 Belmead, Dallas, Tex. 75230
Filed Mar. 16, 1972, Ser. No. 235,468
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—1 D



226,918
MOMENTUM TRANSFER DEMONSTRATION DEVICE
Jerar Andon, 98 Loma Media Road, Santa Barbara, Calif. 93103
Filed Oct. 4, 1971, Ser. No. 186,565
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

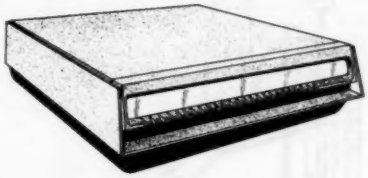
226,919
CONSOLE UNIT
Robert T. Day, Jr., Greensboro, N.C., and David D. Tompkins, Worthington, Ohio, assignors to Gilbert & Barker Manufacturing Company, New York, N.Y.
Filed Sept. 21, 1971, Ser. No. 182,576
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

226,920
DATA PROCESSING CONTROL UNIT
Thomas A. Molyneaux, Waterford Township, Oakland County, Mich., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Sept. 30, 1971, Ser. No. 185,044
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

226,921
CALCULATOR
George W. Cone, La Jolla, and Donald C. Stephan, San Diego, Calif., assignors to Garrett Comtronics Corporation, San Diego, Calif.
Filed June 5, 1972, Ser. No. 260,060
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

226,922
CALCULATOR CASING
Fred M. Gore, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 9, 1972, Ser. No. 261,572
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

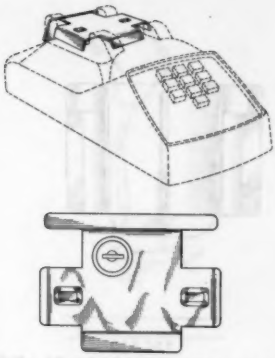
226,923
DIGITAL COMPUTER
John W. Carroll, Pepperell, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed June 19, 1972, Ser. No. 264,136
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



226,924
COMBINED BULB AND HUSK-ADAPTER UNIT FOR DECORATIVE LIGHTS
Terry Hermanson, New York, N.Y., assignor to Mr. Christmas, Incorporated, New York, N.Y.
Filed Dec. 2, 1971, Ser. No. 204,394
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

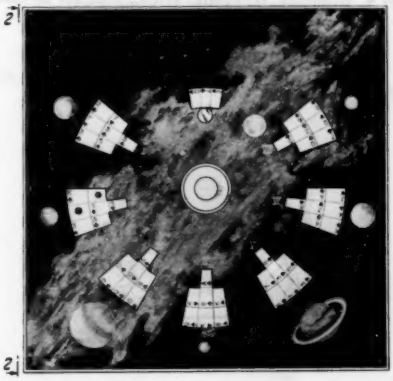
226,925
INDICATOR LAMP
Robert G. Morgan, Antrim, N.H., assignor to GTE Sylvania Incorporated
Filed Dec. 9, 1971, Ser. No. 206,584
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

226,926
TELEPHONE SECURITY LOCK
Edwin C. Glass, Northbrook, Ill., assignor to Gregory Enterprises, Inc., Chicago, Ill.
Filed May 22, 1972, Ser. No. 255,961
Term of patent 14 years
Int. Cl. D14—*03*; D8—*07*
U.S. Cl. D26—14 A

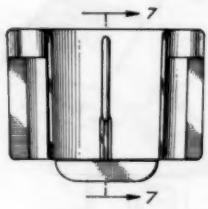


226,927
GOLF TEE AND TETHERED WEIGHT
Edward G. Roe, 19 Orchard St., Pleasantville, N.Y. 10570
Filed June 24, 1971, Ser. No. 156,580
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT

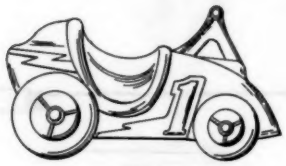
226,928
GAME BOARD
Elaine G. Vigan, 1932 Weepah Way, Hollywood, Calif. 95234
Filed July 19, 1971, Ser. No. 164,189
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



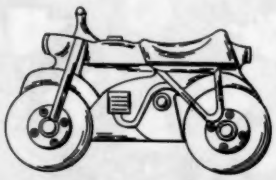
226,929
GOLF BALL HOLDER
William G. Kinard, Pasadena, Calif., assignor to Relton Corporation, Arcadia, Calif.
Filed Sept. 20, 1971, Ser. No. 182,278
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



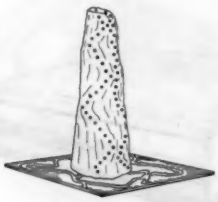
226,930
RACE CAR SHAPED SEAT FOR PLAYGROUND APPARATUS
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Nov. 1, 1971, Ser. No. 194,799
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L



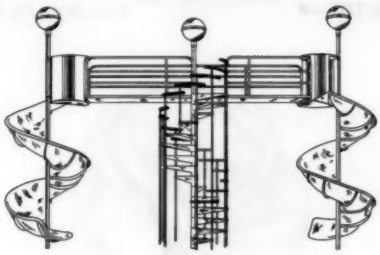
226,931
MINI-BIKE SHAPED SEAT FOR PLAYGROUND APPARATUS
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Nov. 1, 1971, Ser. No. 194,800
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L



226,932
THREE-DIMENSIONAL GAME BOARD
Thomas D. Ledgerwood, 823 Mockingbird Lane, Norman, Okla. 73069
Filed Dec. 1, 1971, Ser. No. 203,933
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

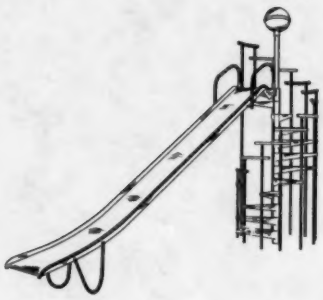


226,933
PLAYGROUND SLIDE WITH DOUBLE SPIRAL SLIDES
Robert S. Wormser and Ronald L. Ewers, Hillsdale, Mich., assignors to Game Time, Inc., Litchfield, Mich.
Filed Dec. 20, 1971, Ser. No. 210,299
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 E

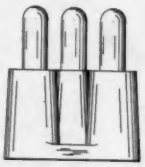


226,934
EXERCISER
Cliff J. Coker, 24641 La Hermosa, Laguna Niguel, Calif. 92677, and Edward A. Burke, 1806 Port Westborne, Newport Beach, Calif. 92660
Filed Mar. 9, 1972, Ser. No. 233,392
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

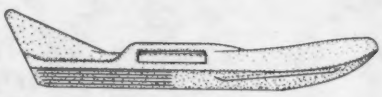
226,935
PLAYGROUND SLIDE WITH CIRCULAR STAIRCASE
Robert S. Wormser and Ronald L. Ewers, Hillsdale, Mich., assignors to Game Time, Inc., Litchfield, Mich.
Filed Dec. 20, 1971, Ser. No. 210,300
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 E



226,936
BUILDING BLOCK
Salvatore C. Parrilla, 811 Literary Road, Cleveland, Ohio 44113
Filed Aug. 20, 1971, Ser. No. 173,723
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG

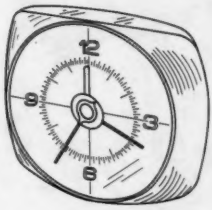


226,937
SLALOM TOBOGGAN
William B. Heniges, 6219 SE. 72nd Ave., Portland, Oreg. 97206
Filed Jan. 17, 1972, Ser. No. 218,642
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15 AK

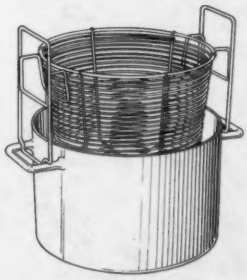


226,938
SCOOTER
Donald Dean Levens, 14 McAfee Court, and Samuel Grimaldo, 776 W. San Doval, both of Thousand Oaks, Calif. 91360
Filed Feb. 7, 1972, Ser. No. 224,378
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AT

226,939
WALL CLOCK
Petrus Joannes Stut, Eelde, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 23, 1971, Ser. No. 165,432
Claims priority, application Netherlands Jan. 28, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



226,940
DEEP FRIER
Michael Lax, New York, N.Y., assignor to Copco, Inc., New York, N.Y.
Filed July 2, 1971, Ser. No. 159,582
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 F



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TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF MAY, 1973

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Akiyama, Hisao; Tobiki, Hisao; Mitani, Toru; Miura, Yasuharu; and Suzuki, Hiroyuki, to Sumitomo Chemical Company, Ltd. Preparation of D-threo-1-p-methylsulfonylphenyl-2 dichloroacetamidopropane-1,3-diol. 3,733,352, Cl. 260-470.000.

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Allen, Jack R.: *See—*
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Allen, Walter E., to Paul, Peter, Electronics. Compensating plunger for solenoid valve and method of making. 3,733,047, Cl. 251-141.000.

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Aluminium Suisse S.A.: *See—*
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Alwitt, Robert S., to Sprague Electric Company. Formation process for producing dielectric aluminum oxide films. 3,733,291, Cl. 204-29.000.

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Andersen, Raymond E. Animal holder. 3,732,847, Cl. 119-103.000.

Anderson, Brian, to Ilford Limited. Indazolone magenta couplers. 3,733,335, Cl. 260-310.00a.

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Anderson, John Dale: *See—*
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Appell, Herbert R.; and Tosh, John S., to United States of America, Interior. Conversion of municipal refuse, sewage sludge and other wastes to heavy oil or bitumen. 3,733,255, Cl. 201-25.000.

Apple, David Linley: *See—*
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Applequist, Roy A.; and Wilson, Laurence M. Split pawl positioning mechanism for a magnetic head. 3,733,592, Cl. 340-174.10c.

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Argus Chemical Corporation: *See—*
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Arneson, Edwin L., to Federal Paper Board Company, Inc. Cup-shaped carton with gusseted seams. 3,733,023, Cl. 229-31.000.

Arnold, Dan McCay; and Pitts, Robert William, Jr., to Texaco Inc. Radiological well logging methods and apparatus for reducing the effect of activation from the detector crystal. 3,733,486, Cl. 250-71.50r.

Arnold, Richard B.; and Smith, Dallas F., to General Electric Company. Apparatus for developing winding coils. 3,732,897, Cl. 140-92.100.

Aro Corporation, The: *See—*
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Arthur, Jett C., Jr.; and Harris, James A., to United States of America, Agriculture. Radiation initiated process for the graft copolymerization of binary monomer mixtures and cellulose. 3,733,257, Cl. 204-159.120.

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Migitaka, Masatoshi; Takahashi, Susumu; Sato, Hitoshi; Nakashima, Hisao; Asai, Shojiro; and Ono, Yuichi, 3,733,527.

Asche, Henning, to Ciba-Geigy A.G. Elixirs with acid addition salts of therapeutically active organic bases as active substances. 3,733,410, Cl. 424-232.000.

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Blackwell, Elliott H., to Warren Pumps, Inc. Rotary pump. 3,733,152, Cl. 418-201.000.

Blankemeyer, James C.; and Blankemeyer, Robert L. Variable tensioning stake. 3,732,878, Cl. 135-15.0pe.

Blankemeyer, Robert L.: *See—*
Blankemeyer, James C.; and Blankemeyer, Robert L., 3,732,878.

Blanksma, Lew: *See—*
Labart, Melvin M.; and Blanksma, Lew, 3,733,530.

Blaw-Knox Food and Chemical Equipment, Inc.: *See—*
Angstadt, John W., 3,733,172.

Blevens, Bertram G.; Wallace, Marshall E.; and Goodman, Walter P., to Cissell, W. M., Manufacturing Company. Garment finishing tunnel. 3,732,628, Cl. 34-32.000.

Blossom, Frank M.; and Silberbauer, John, to Donnelley, Reuben H., Corporation, The. Collating and inserting machine control system. 3,732,664, Cl. 53-57.000.

Blume, Erich: *See—*
Naumann, Gerhard; Marx, Gerhard; and Blume, Erich, 3,733,128.

Blumenthal, Jack L.; and Guth, Eugene D., to TRW Inc. Method for the catalytic decomposition of monopropellant hydrazine. 3,732,694, Cl. 60-218.000.

Bobrow, Edwin N.; and Murdock, Lawrence A., to TRW Inc. Antijamming apparatus. 3,733,607, Cl. 343-100.0pe.

Bockman, Ole Kristian, to Aktiebolaget Svenska Flaktfabriken. Gas-liquid contact apparatus. 3,733,061, Cl. 261-21.000.

Boehringer Ingelheim G.m.b.H.: *See—*
Becher, Heinz-Manfred; and Sehring, Richard, 3,733,415.

Boeing Company, The: *See—*
Heineck, Joseph B.; and Schwab, James J., 3,733,180.

Boivin, Joseph J. R.: *See—*
Hamilton, Douglas D.; Boivin, Joseph J. R.; and Benedetto, Domenico, 3,732,904.

Bolin, Nils Johan Mauritz. Boiler. 3,732,848, Cl. 122-14.000.

Bolkow Gesellschaft mit beschrankter Haftung: *See—*
Held, Manfred; and Spies, Johann, 3,732,823.
Peters, Johannes, 3,733,552.

Bolling, Robert W., Jr.; McCall, Frank S.; and Rawl, Henry J., to Union Camp Corporation. Container. 3,733,024, Cl. 229-55.000.

Bombardi, Aldo L. Automatic page turner. 3,732,773, Cl. 84-491.000.

Bombardier, Jacques: *See—*
Cote, Gilles Yvon; and Bombardier, Jacques, 3,733,107.

Bombardier Limited: *See—*
Cote, Gilles Yvon; and Bombardier, Jacques, 3,733,107.
Samson, Jean-Paul, 3,732,939.

Bopst, John H., III. Rotary movement distance measurement device. 3,732,623, Cl. 33-141.00r.

Bor, Maria, nee Szabo: *See—*
Tuba, Zoltan; and Bor, Maria, nee Szabo, 3,733,329.

Bosch, Robert, G.m.b.H.: *See—*
Wirtz, Rainer, 3,733,539.
Ziesche, Kurt; Hans, Waldemar; Duffner, Josef; Brune, Gerhard; and Grob, Alfred, 3,732,893.

Bostrom, Bertil I., to AGA Aktiebolag. Permanently implantable fixture means for prothesis and the like. 3,732,621, Cl. 32-10.00a.

Botsolas, Chris J. Pipefitting cover. 3,732,894, Cl. 138-178.000.

Bouchard, Kenneth G.; and Teich, Wesley W., to Raytheon Company. Heating element for flush top ranges. 3,733,462, Cl. 219-464.000.

Bourgeois, Joseph F., to Amana Refrigeration, Inc. Ram head for trash compactor. 3,732,806, Cl. 100-29.00a.

Boutell, Henry E., to EMF, Inc. Method for making motor shells and the like. 3,732,614, Cl. 29-477.000.

Boyce, Alvie E.: *See—*
Evers, John J.; Jones, Ralph E.; and Boyce, Alvie E., 3,732,980.

Boychem Corporation: *See—*
Cleveland, Thomas H.; and Bailey, John V., 3,733,296.

Boydell, Kenneth Raymond, to Dowty Technical Developments Limited. Fluid pressure apparatus. 3,732,785, Cl. 91-506.000.

Boyer, Albert E., to Western Electric Company, Incorporated. Bending apparatus for multiple wire-like articles. 3,732,898, Cl. 140-105.000.

BP Chemicals Limited: *See—*
Yeomans, Bertram, 3,733,342.

Bracich, Louis A., to Nu-Air Humidifier Corporation. Humidifier. 3,733,062, Cl. 261-92.000.

Brady, Clifford H. Inertia type switch with adjustable selective seating surface for movable contact. 3,733,448, Cl. 200-61.45r.

Braga, Albert T.; Grall, Kenneth J.; and Marcade, Roque D., to Whirlpool Corporation. Dishwasher silverware basket with soaker means. 3,732,876, Cl. 134-58.00d.

Brandenberg, Karl A., to Aro Corporation, The. Fluid-driven tool with built-in work control mechanism. 3,732,934, Cl. 173-12.000.

Branton, Eric Swdney, to Activated Sludge Limited. Means for diffusing gases into liquids. 3,733,064, Cl. 261-122.000.

Braun A.G.: *See—*
Buxmann, Heinrich-Julius, 3,732,803.

Bray, Charles W. Dual sight attachment for a gun. 3,732,642, Cl. 42-1.00s.

Breimayer, Joseph F., to Eastman Kodak Company. Print inspection and reprint apparatus. 3,733,018, Cl. 226-2.000.

Bremner, David F., to National Cash Register Company, The. Differentially positionable type wheels in remotely controlled print modules. 3,732,812, Cl. 101-99.000.

Bride, John Edwin, to Du Pont de Nemours, E. I., and Company. Werner chromium complexes and method for their preparation. 3,733,346, Cl. 260-438.50c.

Bride, John Edwin, to Du Pont de Nemours, E. I., and Company. Werner chromium complexes and methods for their preparation. 3,733,347, Cl. 260-438.50c.

Bridges, William B., to Hughes Aircraft Company. Laser distance detector. 3,733,129, Cl. 356-5.000.

Briggs, Peter James; and Hurlock, Ronald James, to Imperial Chemical Industries Limited. Nickel complexes from aromatic oximes containing phenolic groups. 3,733,348, Cl. 260-439.

Bronstein, Harry. Circumcision method and probe. 3,732,869, Cl. 128-304.000.

Brookhyser, Byron B.; and Erickson, Harold E., to Weyerhaeuser Company. Stitching unitizer. 3,732,833, Cl. 112-203.000.

Brooks, Dean P.: *See—*
Adee, Raymond A.; Brooks, Dean P.; and Anderson, John Dale, 3,732,672.

Brotton, James: *See—*
Catford, John Russell; and Brotton, James, 3,732,739.

Broughton, Douglas J., to Buxton, Incorporated. Integral key plate for key cases. 3,732,713, Cl. 70-456.00b.

Brown, Alfred; Carlin, Joseph T.; Fontaine, Marc F.; and Haynes, Stewart, Jr., to Texaco Inc. Method for recovery of hydrocarbons utilizing steam injection. 3,732,926, Cl. 166-272.000.

Brown, D. S., Company, The: *See—*
Brown, Delmont D., 3,732,788.

Brown, Delmont D., to Brown, D. S., Company, The. Pavement joint seals. 3,732,788, Cl. 404-64.000.

Brownscombe, Philip J., to Dietzgen, Eugene, Co. Step-by-step drive useful in microfiche cameras. 3,733,126, Cl. 355-54.000.

Brune, Gerhard: *See—*
Ziesche, Kurt; Hans, Waldemar; Duffner, Josef; Brune, Gerhard; and Grob, Alfred, 3,732,893.

Bryant, Jack R.: *See—*
Susolak, Robert J.; and Bryant, Jack R., 3,733,171.

Bubula, Thomas J., to Caterpillar Tractor Company. Fluidic motion limiting system for motor driven apparatus. 3,732,892, Cl. 137-609.000.

Buchman, Carl S.: *See—*
Gwilliam, Willard E.; Buchman, Carl S.; and Hall, Robert, 3,732,650.

Buckman Laboratories, Inc.: *See—*
Buckman, Stanley J.; Flanagan, Kenneth J.; Pera, John D.; and Wienert, Lester A., 3,733,297.

Buckman, Stanley J.; Flanagan, Kenneth J.; Pera, John D.; and Wienert, Lester A., to Buckman Laboratories, Inc. Organic esters and their use as ultraviolet light absorbers and as heat stabilizers. 3,733,297, Cl. 106-178.000.

Budlane, Stanley J.; and Stoll, Donald H., to General Electric Company. Switch control. 3,733,571, Cl. 337-89.000.

Bunker-Ramo Corporation, The: *See—*
Hammond, Peter George Henry, 3,733,577.

Bunney, John Brian; and Cassin, Christopher, to Imperial Chemical Industries Limited. Deformation of polymeric materials. 3,733,383, Cl. 264-88.000.

Burger, Archie F.: *See—*
Israel, Alfred, 3,732,972.

Burgstaller, Gottfried: *See—*
Sanberger, Ludwig; and Burgstaller, Gottfried, 3,733,244.

Burk, George A., to Dow Chemical Company, The. Preparation of white brominated biphenyl. 3,733,366, Cl. 260-649.00d.

Burke, Michael J., to Federal-Mogul Corporation. Apparatus for making an elastomeric annular seal with enclosed garter spring. 3,733,155, Cl. 425-128.000.

Burkey, William D.: *See—*
Marciniak, John C.; and Burkey, William D., 3,732,831.

Burki, Alfred J. Treatment appliance for teeth and the like. 3,732,589, Cl. 15-22.00r.

Burlington Industries, Inc.: *See—*
Illman, Walter F.; and Hyder, Clarence R., 3,732,603.

Burns, Arnold J.; Snow, Glen F.; and Vandersall, Howard L., to Monsanto Company. Fire retardant coating composition. 3,733,289, Cl. 260-28.50r.

Burns, Eugene A.: *See—*
Martin, Jon W.; Burns, Eugene A.; and Meyers, Robert A., 3,733,295.

Burns, William F., to Petrolite Corporation. Circular flotation system. 3,733,272, Cl. 210-221.000.

Burnside, Walter M.: *See—*
Hooker, Donald E.; and Burnside, Walter M., 3,733,075.

Burroughs Corporation: *See—*
Hanley, Hope, 3,732,638.
Skiba, Raymond A.; Funk, John W.; and Merlino, Eugene L., Jr., 3,732,810.

Bush, Charles E. Welding rod holder. 3,732,986, Cl. 211-60.00r.

Buten, Norman: *See—*
Catalano, Paul D.; Buten, Norman; Eash, George H.; and Emanuel, Frank V., 3,733,119.

Buxmann, Heinrich-Julius, to Braun A.G. Device for toasting and/or grilling. 3,732,803, Cl. 99-357.000.

Buxton, Incorporated: *See—*
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Buzby, George C., Jr.; and Greenspan, George, to American Home Products Corporation. Method of preparing D-13β-ethylgona-1,3,5(10)-triene-3, 16α, 17β-triol. 3,733,254, Cl. 195-51.00c.

Buzova, Zoya Mikhailovna: *See—*
Nabiullin, Faat Khatovich; Buzova, Zoya Mikhailovna; Gertsik, Efim Mikhailovich; Marfin, Boris Vasilievich; Rabinovich, Vyacheslav Anatolievich; and Koval, Ivan Ivanovich, 3,732,607.

Buzzolini, Mario G.: *See—*
Frey, Albert J.; and Buzzolini, Mario G., 3,733,418.

Byssing, George J. Non progressive wall construction. 3,732,660, Cl. 52-489.000.

Cady, Royal C., to Universal Oil Products Company. Automatic gate means for handling thin veneer-type sheets. 3,733,069, Cl. 271-50.000.

Cagle, Harlan R., to Sahlin Engineering Company, Inc. Lift control system for press unloader or the like. 3,732,989, Cl. 214-1.0bd.

Caloric Corporation: *See—*
Kristof, Dezso S., 3,732,802.

Calzificio Fratelli Protasoni Societa di fatto di Mario e Trento Protasoni: *See—*
Rosso, Pietro, 3,732,832.

Campbell, Keir Charles, to McDougall, Ranks Hovis Limited. Method of feeding chitinous meal to crustacea. 3,733,204, Cl. 99-402.00r.

Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence: *See—*
Poirier, Arthur L., 3,733,563.

Canadian International Paper Company: *See—*
Hamilton, Douglas D.; Boivin, Joseph J. R.; and Benedetto, Domenico, 3,732,904.

Canon Kabushiki Kaisha: *See—*
Iwawaki, Yasutaka; Yoshikawa, Minoru; and Usui, Yukio, 3,733,443.
Jensen, Herman G.; and Williams, Bernhard O., 3,732,875.
Ogiso, Mitsutoshi; Itani, Takashi; and Takahashi, Kiyoshi, 3,733,117.
Takigawa, Tomoshi, 3,732,797.

Captain International Industries, Ltd.: *See—*
Ungerman, Warren J., 3,733,007.

Cardozo, Benjamin Lopes: *See—*
Willems, Leonardus Franciscus; Neelen, Joseph Jacobus Marie; and Cardozo, Benjamin Lopes, 3,732,868.

Carley, James A., to Los Angeles Miniature Products, Inc. End lamp accessory. 3,733,479, Cl. 240-2.00r.

Carlin, Joseph T.: *See—*
Brown, Alfred; Carlin, Joseph T.; Fontaine, Marc F.; and Haynes, Stewart, Jr., 3,732,926.

Carlisle, Richard W.: *See—*
Sebesta, George J.; and Carlisle, Richard W., 3,733,445.

Carrier Corporation: *See—*
Morgan, Robert D., 3,732,704.

Carstensen, Michael N. Multiple use body support. 3,733,104, Cl. 297-377.000.

Carstenson, Lauren M. Underground water discharging and sprinkling device. 3,733,030, Cl. 239-205.000.

Carter, Margaret A.: *See—*
Carter, Norman T.; and Carter, Margaret A., 3,732,955.

Carter, Norman T.; and Carter, Margaret A. Travel case for infant supplies. 3,732,955, Cl. 190-51.000.

Carter's Ink Company, The: *See—*
Koch, Paul L.; and Maxwell, James C., 3,733,613.

Case, J. I., Company: *See—*
Lamer, Gerald P., 3,732,988.

Cassar, Luigi; and Foa, Marco, to Montecatini Edison S.p.A. Process for the preparation of carboxylated aromatic compounds. 3,733,354, Cl. 260-515.00r.

Cassel, Alan F.: *See—*
Bishop, Dolloff F.; Cassel, Alan F.; and Pressley, Thomas A., 3,733,266.

Casset, Georges; Driffort, Jean Pierre; and Lebel, Pierre, to Ste dite France-Couleur. Beam-deflection system for color television picture tube. 3,733,507, Cl. 313-70.00c.

Cassin, Christopher: *See—*
Bunney, John Brian; and Cassin, Christopher, 3,733,383.

Castaldi, John A., to Supreme Equipment & Systems Corporation. Random access store for cards, file folders and the like. 3,732,742, Cl. 74-89.200.

Catalano, Paul D.; Buten, Norman; Eash, George H.; and Emanuel, Frank V., to Retention Communication Systems, Inc. Audio-visual system. 3,733,119, Cl. 352-78.00r.

Caterpillar Tractor Company: *See—*
Bubula, Thomas J., 3,732,892.

Catford, John Russell; and Brotton, James, to Elliott Brothers (London) Limited. Monitoring of gyroscope rotation. 3,732,739, Cl. 74-5.600.

Cavalli, Paolo, to Fiat Societa per Azioni. Control device for the manual regulation of the speed of compression-ignition engines. 3,732,748, Cl. 74-502.000.

Cayon, David Walter: *See—*
Field, Fred Walker; and Cayon, David Walter, 3,732,931.

Cecchin, Gildo; and Hilbert, Francis H. Signal processing circuit for a color television receiver. 3,733,562, Cl. 332-9.00t.

Celanese Corporation: *See—*
Ram, Michael J.; and Reynolds, Thomas K., 3,732,974.

Centaur Chemical Co.: *See—*
Avakian, Souren, 3,732,734.

Centre National de Recherches Metallurgiques: *See—*
van den Hove, Christian; and Renard, Lucien, 3,733,049.

Chaki, Kouin. Pick up device for stringed instrument. 3,733,425, Cl. 84-1.140.

Chakrabarti, Paritosh M.; and Volpp, Gert P., to FMC Corporation. Polymers derived from chloromaleic anhydride as detergent builders. 3,733,280, Cl. 252-539.000.

Chamberlin, Robert W.: *See—*
Hesslein, Robert J.; and Chamberlin, Robert W., 3,733,081.

Chambers, R. William, to Separation and Recovery Systems, Inc. Fuel gas separator. 3,732,669, Cl. 55-321.000.

Champion, Luther F.: *See—*
Hopkins, Walker L.; White, William D.; and Champion, Luther F., 3,733,476.

Changnon, Donald H., to U.S. Research & Development Corporation. Individual identification device. 3,732,640, Cl. 40-2.200.

Chapman, Arthur S., to Hughes Aircraft Company. Balanced tiltable, rotating mirror with its optical axis angularly offset from its axis of rotation. 3,733,133, Cl. 356-152.000.

Chaud, Andre; Vieira, David Da Costa; Friedling, Georges; Suzan, Henri; and Vieuxmaire, Calude, to Commissariat a l'Energie Atomique. Device for indicating rapid radioactive conatmination. 3,733,488, Cl. 250-83.30r.

Checcaggi, Pier Francesco; and Scheggi, Annamaria, to Consiglio Nazionale Delle Ricerche. Dielectric frame beam waveguide. 3,733,114, Cl. 350-96.0wg.

Chelette, Francis M.; and Goodwin, Charles G. Apparatus for attaching to the outer of a plurality of tubular members and of cutting through, valving closed, and diverting material flow from all of the tubular members. 3,732,924, Cl. 166-55.000.

Chemical Construction Corporation: *See—*
Tourtellotte, John F.; and Villiers-Fisher, John F., 3,733,181.

Chen, Francis F.: *See—*
Hendel, Hans W.; Chen, Francis F.; Chu, Tsu-Kai; Furth, Harold P.; Perkins, Francis W.; Simonen, Thomas C.; and Taylor, John B., 3,733,248.

Chen, James Ling, to Squibb, E. R., & Sons, Inc. Gelled mineral oil. 3,733,403, Cl. 424-83.000.

Chiga, George C.: *See—*
Parker, Laurence J., 3,733,449.

Child, Edward T.; May, John E.; and Stepanek, William D., to Texaco Inc. Means and method for controlling the strength of acid in an alkylation unit. 3,733,473, Cl. 235-151.120.

Chiola, Vincent; Dodds, Phyllis R.; and Kim, Tai K., to GTE Sylvania Incorporated. Organo-molybdenum phosphorodithioates and method for producing same. 3,733,345, Cl. 260-429.00lk.

Chodil, Gerald J.; and Dejule, Michael C., to Zenith Radio Corporation. Intergral memory image display or information storage system. 3,733,435, Cl. 178-7.30d.

Christie, Christopher E.: *See—*

Fedor, James R.; and Christie, Christopher E., 3,732,968.
Chu, Ju Chin. Controllable solid propulsion system. 3,732,693, Cl. 60-207.000.
Chu, Tsu-Kai: *See—*
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Churchill, John P.; Thompson, Tommy Lewis; and McBride, William S., to Life Support, Inc. Carrying case for oxygen generators. 3,733,008, Cl. 222-6.000.
Chvatal, Leland A.: *See—*
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Ciba Limited: *See—*
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Cincinnati Milacron Inc.: *See—*
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Cirgenski, Adam, Jr.; and Stilles, Vernon C., to Stile-King Stairs, Inc. and Scholz Homes, Inc. Method of making curved staircase. 3,732,609, Cl. 29-428.000.
Cissell, W. M., Manufacturing Company: *See—*
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Cities Service Company, mesne: *See—*
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Citizen Watch Company, Limited: *See—*
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Citroen S.A. (Automobiles Citroen Berliet, Panhard): *See—*
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Clairol Incorporated: *See—*
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Clark Equipment Company: *See—*
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Stuller, Howard E.; and Walser, Glenn E., 3,732,636.
Whitworth, Franka D., 3,732,637.
Clark, Michale Gordon; and Bhatty, Saleem Sabir, to Union Carbide Canada Limited. Water proof electrical cable. 3,733,427, Cl. 174-23.00c.
Clavera, Juan Cusco, to Segura Viudas, S.A. Device for the display of bottles. 3,733,041, Cl. 248-154.000.
Clements, Herbert Arthur: *See—*
Sinclair, Harold; and Clements, Herbert Arthur, 3,733,095.
Cleveland, Thomas H.; and Bailey, John V., to Boychem Corporation. Stabilized polycarbonates. 3,733,296, Cl. 260-45.70p.
Clough, Thomas J., to Atlantic Richfield Company. Process for preparing a phosphorylated alpha-olefin polymer. 3,733,363, Cl. 260-606.50p.
Cobey, Herbert T. Compost and refuse shredding and shifting apparatus. 3,733,033, Cl. 241-30.000.
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Coffman, Paul M., to Shell Oil Company. Apparatus for manufacture of void-free and warp-free slab stock. 3,733,159, Cl. 425-186.000.
Cohen, Jules Barry, to Medical Laboratory Automation, Inc. Pipettes. 3,732,735, Cl. 73-425.600.
Cole, Edward L.: *See—*
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Collet, Jean, to Collet, A., & Fils S.A. Deployable blind. 3,732,912, Cl. 160-55.000.
Collins, Albert E., Jr. Method of making a drapery swag. 3,733,227, Cl. 156-196.000.
Collins Radio Company: *See—*
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Colovas, Denny D.; Logan, John S.; and Skruch, Richard R., to Ford Motor Company. Guided vehicle power supply system. 3,733,446, Cl. 191-49.000.
Columbia Broadcasting System, Inc.: *See—*
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Colwell, William T., Jr.: *See—*
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Combustion Engineering, Inc.: *See—*
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Compagnie Generale de Radiologie: *See—*
Louche, Jean Claude Paul; and Loucheur, Rene, 3,733,487.
Concrete Pipe Machinery Company: *See—*
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Conery, William J.; and Kaessen, Donald A., to Hydr-O-Matic Pump Company. Air relief valve assembly. 3,732,889, Cl. 137-498.000.
Conn, Richard W., 15% to Zimmerman, Michael C. Digital computer having a plurality of serial storage devices for central memory. 3,733,588, Cl. 340-172.500.
Consiglio Nazionale Delle Ricerche: *See—*
Checcaggi, Pier Francesco; and Scheggi, Annamaria, 3,733,114.
Consolidated Papers, Inc.: *See—*
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Control Data Corporation: *See—*
Tate, Donald P.; and Steiner, Louis Kent, 3,733,477.
Convain, Michel; and Meresse, Pascal, to Societe Anonyme Pronal. Closing device for a pneumatic system. 3,732,888, Cl. 137-489.000.
Cook, Shirl E.; and Sistrunk, Thomas O., to Ethyl Corporation. Thermal stabilization of tetramethylead. 3,733,344, Cl. 260-437.00s.
Cooksey, John A.; and Fazio, James Anthony, to Singer Company, The. Degaussing circuit. 3,733,524, Cl. 317-157.500.
Cooper, Glenn D.; and Bennett, James G., to General Electric Company. Process for the preparation of poly-phenylent ethers with activated copper-amine catalysts. 3,733,299, Cl. 260-47.0et.
Cooper, Glenn D., to General Electric Company. Copolymers of polyphenylene ethers. 3,733,307, Cl. 260-61.000.
Cooper, James R. Reversible safety ground plug. 3,733,576, Cl. 339-14.00p.
Cooper, Thomas R.: *See—*
Edwards, Richard R.; Hopkins, Walker L.; Chvatal, Leland A.; and Cooper, Thomas R., 3,733,474.
Cootes, Harold Edwin, to AMP Incorporated. Tool for crimping joint fasteners or the like. 3,732,720, Cl. 72-410.000.
Cope, Troy, to Electric Furnace Company, The. Heat exchange method and apparatus. 3,732,916, Cl. 165-1.000.
Coppertech Inc.: *See—*
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Corkle, David P.; and Hagey, Lee P., to Electro-Voice, Inc. Ambipolar microphone unit. 3,733,441, Cl. 179-81.00b.
Cornacchio, Americo: *See—*
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Cortese, Nicholas J.; and Bell, James E., to ESB Incorporated. Water activated lead-acid battery having dried, discharged electrodes. 3,733,220, Cl. 136-26.000.
Coryell, Austin S.: *See—*
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Coscia, Anthony Thomas: *See—*
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Cote, Gilles Yvon; and Bombardier, Jacques, to Bombardier Limited. Endless track tension release mechanism. 3,733,107, Cl. 305-10.000.
Cottin, Jean Claude, to Produmatic. Hydrostatic end pressure balancing device for machine tools. 3,732,757, Cl. 82-2.000.
Couillaud, Jean-Pierre; and Louise, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Purification of combustion products before discharge into the atmosphere. 3,733,393, Cl. 423-215.000.
Coulter Electronics, Inc.: *See—*
Coulter, Wallace H.; Hogg, Walter R.; and Longman, Millard Dumas, 3,733,547.
Coulter, Wallace H.; and Hogg, Walter R., 3,733,548.
Coulter, Wallace H.; Hogg, Walter R.; and Longman, Millard Dumas, to Coulter Electronics, Inc. Method and apparatus for measuring particle concentration in a fluid suspension of particles. 3,733,547, Cl. 324-71.0cp.
Coulter, Wallace H.; and Hogg, Walter R., to Coulter Electronics, Inc. Apparatus and method for measuring particle concentration of a suspension passing through a sensing zone. 3,733,548, Cl. 324-71.0cp.
Courtot, Jean-Pierre, to Societe des Accummulateurs Fixes et de Traction (Societe Anonyme). Low impact energy electrochemical cells and batteries. 3,733,219, Cl. 136-13.000.
Cox, Arthur, to Austin Company, The. Symmetrical optical lens system. 3,733,115, Cl. 350-214.000.
Cramer, Joseph F.; and Nickerson, Douglas W., to Motorola, Inc. Stable low current amplifier. 3,733,558, Cl. 330-17.000.
Crawford, James H., to Indian Head, Inc. Net. 3,733,243, Cl. 161-48.000.

Crawford, Lois H. Combined denture case and brush. 3,732,973, Cl. 206-15.10e.

Cricchi, James R., to Westinghouse Electric Corporation. Non-volatile memory element. 3,733,591, Cl. 340-173.00r.

Crompton & Knowles Corporation: *See—*
Long, Delmar D.; Rust, Edgar C., Jr.; and Lawrence, Stanley L., 3,733,238.

Crosbie, Richard J.; and Passavanti, Louis A., to United States of America, Navy. Visual simulator. 3,732,630, Cl. 35-12.00n.

Crossland, William Alden; Marr, Colin Andrew; and Hailes, Laurence, to International Standard Electric Corporation. Thick film circuits. 3,733,182, Cl. 29-195.000.

Crotty, Francis N.; Gause, William C.; and Hartranft, George E., to Western Electric Company, Incorporated. Methods of and apparatus for twisting and stranding cable pairs in a tandem operation. 3,732,682, Cl. 57-59.000.

Crough, Paul E., to Eastman Kodak Company. Photographic composition of sodium and potassium ions for treating direct positive emulsions. 3,733,199, Cl. 96-64.000.

Crown Cork & Seal Company, Inc.: *See—*
Deubel, Hans D., 3,732,917.

Csapo, Michael, to Selas Corporation of America. Seal for tower furnace. 3,732,993, Cl. 214-18.000.

Csapo, Michael; Waldman, Nathan; and Micho, William E., to Dow Chemical Company, The. Tower furnace collecting mechanism. 3,733,173, Cl. 263-27.000.

Csok, Tibor; and Franz, Karl, to Du Pont de Nemours, E. I., and Company. Product and process. 3,732,684, Cl. 57-140.0by.

Cuckler, Virgil A.; and Wente, Laverne A., to Motorola, Inc. Microwave intrusion detecting system and apparatus. 3,733,602, Cl. 343-5.0pd.

Culbertson, Thomas L., to United States of America, Navy. Bottom-freezing apparatus. 3,732,918, Cl. 165-106.000.

Curtis, L. Paul; Ying, Sui-Chun; and Luzader, James E., to Westinghouse Electric Corporation. Liquid cooled rotor for dynamoelectric machines. 3,733,502, Cl. 310-61.000.

Cusimano, Matt, to Cusimano Tool Development Corporated. Portable apparatus for forming bends in concrete reinforcing rods. 3,732,721, Cl. 72-458.000.

Cusimano Tool Development Corporated: *See—*
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Cyr, Gilman N.; Riffkin, Charles; and Rifino, Carl B., to Squibb, E. R., & Sons, Inc. Antifacterial composition containing aminobenzyl penicillins. 3,733,404, Cl. 424-114.000.

Daido Sanso Kabushiki Kaisha: *See—*
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Damon Corporation: *See—*
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Dane, Ernest B., Jr. Ship sections adapted for disassembly and re-assembly at sea. 3,732,840, Cl. 114-77.00r.

D'Anneo, Jerome Frank, to International Business Machines Corporation. Storage rack and sprinkler arrangement. 3,732,930, Cl. 169-2.00r.

Darlak, Robert Stanley: *See—*
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Daus, Donald A.: *See—*
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Davis, Owen R.; Haupt, Robert C.; Hansen, Kenneth N.; and Slosirek, Michael L., to Allis-Chalmers Corporation. Vehicle chassis resiliently supported on main frame. 3,732,941, Cl. 180-89.00r.

Davis, Paul B., to TRW Inc. Multi-material filament woven cage. 3,733,110, Cl. 308-217.000.

Davis, Walter Thomas, to Formica Corporation. Decorative laminate coated on its back most surface with a carboxylated styrene-butadiene polymeric rubber based adhesive and process for installing the same. 3,733,242, Cl. 161-160.000.

Dawson, William N.: *See—*
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De Bock, Cornelis Albertus; and Schlatmann, Joseph Lucas Maria Antonius, to U.S. Philips Corporation, mesne. Spiro-azatetramethylene derivatives as antiinfluenza agents. 3,733,412, Cl. 424-274.000.

De Caro, Aristide R.: *See—*
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de Germond, Hubert. Method of making bearings. 3,732,606, Cl. 29-148.40a.

De Laet, Jules Maria: *See—*
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Field, Fred Walker; and Cayon, David Walter, 3,732,931.
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Deffner, John F.; Tucci, Edmond R.; and Ward, John V., to Gulf Research & Development Company. Oxo process. 3,733,361, Cl. 260-604.0hf.

Defontenay, Paul; and Lewis, Ian John, to Societe Anonyme dite: Wean Damiron and Redex. Devices for controlling the carriage of a portable shear. 3,732,741, Cl. 74-55.000.

Deis, Daniel W.; and Roland, George W., to Westinghouse Electric Corporation. Pyroelectric detector. 3,733,499, Cl. 310-4.000.

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DeLigt, John; and Shelor, Clifford D., to Westvaco Corporation. Fabrication of laminated structural panels. 3,733,235, Cl. 156-260.000.

Dennis, Jack R., to Harowe Servo Controls, Inc. Self supporting rotary electrical device. 3,733,504, Cl. 310-86.000.

Dennison Manufacturing Company: *See—*
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Deprez, Jean-Claude; and Munier de Montrichard, Charles Jacques, to Societe Industrielle des Nouveiles Techniques Radioelectriques et de l'Electronique. Device for the storage, selection and locating in a reading position of informations recorded on micro-ards. 3,732,977, Cl. 209-110.500.

Derrig, Donald J., to Watkins Salt Company. Stabilizer for ethylene diamine dihydriodide. 3,733,405, Cl. 424-171.000.

DeSantis, Raymond P.: *See—*
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Deubel, Hans D., to Crown Cork & Seal Company, Inc. Method and apparatus for altering the temperature of containers. 3,732,917, Cl. 165-1.000.

Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See—*
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Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Dewaele, Daniel Camille Cornelius, to Lamson Paragon Limited. Photo-composing machines. 3,733,125, Cl. 355-43.000.

Diakides, Nicholas A.; and Sormberger, Richard L., to United States of America, Army. Method and apparatus for measuring image forming properties of an image display panel. 3,733,135, Cl. 356-156.000.

Diamond, Julius, to Rorer, William H., Inc. Method of reducing inflammation, pain and fever. 3,733,416, Cl. 424-308.000.

Diamond Shamrock Corporation: *See—*
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Dianora, Mario D., to United States of America, Navy. Frequency step generator. 3,733,542, Cl. 321-60.000.

Dickson, Rufus F. Waste disposal method and facility. 3,732,697, Cl. 61-35.000.

Diebold, Incorporated: *See—*
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Dietzgen, Eugene, Co.: *See—*
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Dodd, Delwin E.; Li, Kuei-Jung; and Golding, Robert A., to Shell Oil Company. Process for the separation of polymers from a recycle stream that contains ethylene. 3,733,368, Cl. 260-677.00a.

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Eisele, Andrew. Spindle for dial indicator gauge. 3,732,624, Cl. 33-174.00q.
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Elder, Ronald R., 50% to Webber, Harrison B. Collapsible ironing board for travelers. 3,732,639, Cl. 38-139.000.
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Evans, Reginald. Rotary coupling. 3,732,706, Cl. 64-31.000.

Evans, Wendell I., to Cincinnati Milacron Inc. Variable gain amplifier for hydraulic servo-control systems. 3,732,782, Cl. 91-6.000.

Evers, John J.; Jones, Ralph E.; and Boyce, Alvie E., to Gebhardt, Robert C., Co. Earth moving and screening equipment. 3,732,980, Cl. 209-421.000.

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Fantozzi, Louis J., to Xerox Corporation. Triggering apparatus for a flash lamp. 3,733,599, Cl. 340-343.000.

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Fedor, James R.; and Christie, Christopher E., to Goodyear Tire & Rubber Company, The. Apparatus for orienting material. 3,732,968, Cl. 198-33.0ab.

Fedorenko, Igor Nikolaevich; Gurin, Fedor Vasilievich; Smelyansky, Vadim Mikhailovich; Voronin, Alexei Vasilievich; and Kuranov, Alexei Dmitrievich. Piston turning lathe. 3,732,759, Cl. 82-19.000.

Fekete, Gyorgy: *See—*
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Feldmann, Herman F., to United States of America, Interior. Process for converting solid wastes to pipeline gas. 3,733,187, Cl. 48-209.000.

Felker, Samuel A. Radial and axial airflow fan. 3,733,147, Cl. 416-214.000.

Fell, Ferol S.; and Long, William D., to Hesston Corporation. Gear transmission having mechanism for reverse grinding. 3,732,740, Cl. 74-15.200.

Feller, Jay M., to FMC Corporation. Regenerated cellulose filaments containing a flame-retardant phosphonitrilate polymer and an organic phosphate salt to reduce filament to metal friction. 3,732,683, Cl. 57-140.00r.

Fennell, Marcus W. Golf club attachment for determining optimun club head weight. 3,733,077, Cl. 273-186.00a.

Ferber, Franz, to Vereinigte Deutsche Metallwerke. Method of and apparatus for determining the internal diameter of pipes. 3,732,726, Cl. 73-67.50r.

Fetchin, John Allan, to American Cyanamid Company. Bleaching of cellulose fibers with an aqueous solution of water-soluble hydroperoxypentacyanocobaltate salt. 3,733,247, Cl. 162-78.000.

Fiat Societa per Azioni: *See—*
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Fichtel & Sachs A.G.: *See—*
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Field, Fred Walker; and Cayon, David Walter, to Deere & Company. Electronically controlled row crop thinning machine. 3,732,931, Cl. 172-6.000.

Fieldcrest Mills, Inc.: *See—*
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Firey, Joseph Carl. Gasoline engine choke delay devices. 3,732,856, Cl. 123-179.00a.

Firth, William Charles, Jr., to American Cyanamid Company. Aryl sulfate polymers and methods for their production. 3,733,304, Cl. 260-49.000.

Firth, William Charles, Jr.; and Simon, Frank. Process for preparing tetrakis(difluoramino) methane. 3,733,360, Cl. 260-583.0nh.

Fischer, Paul; Richmond, Park; and Wurthmann, Gunther E., to United States of America, Army. Electron discharge devices using electron-bombarded semiconductors. 3,733,510, Cl. 315-5.240.

Fisher, Colin, to Image Analysing Computers Limited. Image analysis. 3,733,433, Cl. 178-6.800.

Fitzpatrick, Douglas: *See—*
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Fitzpatrick, John D., to General Motors Corporation. Transmission control lever assembly. 3,732,746, Cl. 74-473.00r.

Fitzpatrick, John R., 1/4 to Fitzpatrick, Douglas, 1/4 to Dawson, William N. and 1/4 to Tyler, Robert S., Jr. Bottom hole pressure and temperature indicator. 3,732,728, Cl. 73-151.000.

Fitzsimmons, Robert D., to Gale Systems, Inc. Method for producing standing wave of solder and protective film means. 3,732,615, Cl. 29-503.000.

Flageollet, Michel. Curtain rod with electrically driven carriage. 3,732,914, Cl. 160-331.000.

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Fletcher, Harold A. Lightweight vehicle. 3,732,587, Cl. 9-6.000.

Floyd, G. Farlan. Explosive composition containing phosphorus and particulate coffee. 3,733,224, Cl. 149-30.000.

FMC Corporation: *See—*
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Foerstner, Richard A.; and Mims, James R., to Amana Refrigeration, Inc. Positive locking mechanical coupling arrangement. 3,733,455, Cl. 219-10.550.

Fong, Leong Q. Fluidized bed and method of treating granular material. 3,733,056, Cl. 259-4.000.

Fontaine, Marc F.: *See—*
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Forster, Brian Michael, to G.K.N. Birfield Transmissions Limited. Apparatus for use in wheel counterbalancing. 3,732,737, Cl. 73-462.000.

Forward, Worthy J., Jr., to USM Corporation. Chip remover. 3,732,592, Cl. 15-246.500.

Fouche, George H. Battery cable. 3,733,578, Cl. 339-232.000.

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Fox, Joseph S.; and Dresher, William H., to Union Carbide Corporation. Recovery of vanadium from titaniferous iron ores. 3,733,193, Cl. 75-1.000.

Foxwell, William J.; and Parsons, James D., to Ford Motor Company. Tractor hydraulic lift system. 3,732,933, Cl. 172-7.000.

Francis, Theodore R. Orientation apparatus. 3,732,967, Cl. 198-33.0ac.

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French, James, Jr., to Video Aid Corporation of Colorado. Edit control apparatus for recording equipment. 3,733,444, Cl. 179-100.20b.

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Frey, Albert J.; and Buzzolini, Mario G., to Sandoz-Wander, Inc. Method of treating hyperlipemia using bis (substituted phenyl)acetals. 3,733,418, Cl. 424-324.000.

Frey, Louis Elliott. Mattress construction. 3,732,586, Cl. 5-345.000.

Fried Krupp. Gesellschaft mit beschrankter Haftung: *See—*
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Frieder, Leonard P., Jr., to Gentex Corporation. Dunnage door for cargo box. 3,733,005, Cl. 220-85.00b.

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Fuji Photo Film Co., Ltd.: *See—*
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Fujio, Masaaki. Sealed container. 3,733,002, Cl. 215-12.00r.
Fujita, Toshihito; Takao, Nobuyuki; and Kodama, Atsuki, to Nito Boseki Co., Ltd. Process for producing glass fiber-reinforced polypropylene molded article. 3,733,300, Cl. 260-41.0ag.
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Furgal, Henry P.; Falivene, Pasquale J.; and Marchesani, Cesare N., to Colgate-Palmolive Company. Non-woven, sponge laminated cloth. 3,732,652, Cl. 51-401.000.
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Furst, Stefan; deceased (by Dormanns, Stefanie; and Furst, Hans J.; heirs), to Reiners, Walter. Weft supplying device for a warp knitting machine. 3,732,707, Cl. 66-84.000.
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Gach, Peter P., to Sunbeam Plastics Corporation. Child-proof container and closure unit. 3,733,001, Cl. 215-9.000.
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Garuts, Valdis E., to Tektronix, Inc. Wide band amplifier having two separate high and low frequency paths for driving capacitive load with large amplitude signal. 3,733,514, Cl. 315-27.0td.
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Gerber, Heinz Joseph, to Gerber Garment Technology, Inc. Apparatus and method for cutting sheet material with chopping type blade motion. 3,732,764, Cl. 83-34.000.
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Gilbertson, Jon C.; and Gorsky, Raymond A., to Combustion Engineering, Inc. Control rod release mechanism. 3,733,251, Cl. 176-36.00r.
Gilbreath, Benjamin F., to Hunt Electronics Company. Dimmer unit for a lighting control system. 3,733,528, Cl. 315-291.000.
Gilkey, Walter W. Mercury screen centrifugal separator [and method]. 3,732,979, Cl. 209-199.000.
Gillow, Albert V.; and Marple, Wendell P., to International Business Machines Corporation. Current sensor for low pass filter. 3,733,536, Cl. 321-10.000.
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Giuffre, Luigi; and Sioli, Giancarlo, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Method for the preparation of omega-lactams and their lactamizable precursors. 3,733,317, Cl. 260-239.30a.

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Glass, Neel W., to Les-Kare, Inc. Molded horse boot. 3,732,929, Cl. 168-18.000.

Glassford, Joseph B.; and Lazar, John Daniel. Drawer assembly. 3,733,113, Cl. 312-330.000.

Glaude, Philemon; Karcher, Walter; and Smets, Robert, to European Atomic Energy Community (Euratom). System for adsorption measurement. 3,732,736, Cl. 73-432.0ps.

Glenn, William E., Jr., to Columbia Broadcasting System, Inc. Studio lighting apparatus. 3,733,480, Cl. 240-20.000.

Gloucester Engineering Co., Inc.: *See—*
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Gooch, Jan W., 47% to Paladino, Paul and 6% to Haley, John H. Process for coagulating and agglomerating particulate material within a liquid media. 3,733,269, Cl. 210-47.000.

Goodale, William B., to Ford Motor Company. Pump suitable for a hydraulic steering power system having an auxiliary power source. 3,733,148, Cl. 417-214.000.

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Gordon, Peter R., to Leland Stanford Junior University, The Board of Trustees of the. High pressure valve. 3,733,050, Cl. 251-214.000.

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Griffin, Tommy K. Automatic reloading apparatus and shotgun shell drive means therefor. 3,732,774, Cl. 86-23.000.

Griffiths, Wilfred, to Abrasive Aids Pty. Limited. Method of making a roller. 3,733,233, Cl. 156-153.000.

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Grosseau, Albert, to Citroen S.A. (Automobiles Citroen Berliet, Panhard). Multi-stage rotary jacks. 3,732,786, Cl. 92-66.000.

Grout, Edward C., to Sta-Rite Industries, Inc. Timer. 3,732,738, Cl. 74-3.520.

Grueber, Detlef, to Arlyn Industries Ltd. Tool for trimming laminated plastic sheets. 3,732,619, Cl. 30-287.000.

Grun, Gustav, to Luco-Technic AG. Dispensing device for a bulk material receptable. 3,733,012, Cl. 222-193.000.

Grunert, Kurt A.; and Schaltenbrand, Robert W., to Westinghouse Electric Corporation. Relay with surge suppressor. 3,733,516, Cl. 317-16.000.

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Guehler, Paul F., to Minnesota Mining and Manufacturing Company. Method and apparatus for the quantitative determination of blood chemicals in blood derivatives. 3,733,179, Cl. 23-230.00b.

Guiler, Keith, to United States of America, Navy. Torsion bar for raising and lowering a target. 3,733,073, Cl. 273-102.10e.

Guillory, Calvin J. Article shredding machine. 3,732,674, Cl. 56-13.100.

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Gundlach, Richard P., to Gamco Industries, Inc., mesne. Film training projector. 3,733,118, Cl. 352-97.000.

Gupta, Monoj K.; and James, William M., to Procter & Gamble Company, The. Culinary mix for the preparation of baked goods with improved milk chocolate flavor. 3,733,209, Cl. 99-94.000.

Gurin, Fedor Vasilievich: *See—*
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Guthier, Mary L. Elastic fabric material for home use and method of employing same in the reconstruction and construction of garments. 3,732,576, Cl. 2-221.000.

Gutman, Arnold D., to Stauffer Chemical Company. Oxime carbamate phosphate, phosphonate, phosphinate and phosphoroamidates. 3,733,375, Cl. 260-938.000.

Gutman, Arnold D., to Stauffer Chemical Company. Controlling fungi and bacteria with certain oxime esters. 3,733,419, Cl. 424-327.000.

Gwilliam, Willard E.; Buchman, Carl S.; and Hall, Robert, to Universal Prestressed Concrete Co., Inc. Prefabricated exterior wall unit. 3,732,650, Cl. 52-221.000.

Haas, Ronald H.: *See—*
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Haase, Gordon W., to Taussig, Frederick. Process of filtration of dry cleaning fluid. 3,733,267, Cl. 210-27.000.

Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, to Ciba-Geigy AG. Epoxy resin mixtures containing heterocyclic systems. 3,733,282, Cl. 260-830.0tw.

Habert, William C., to Uniroyal, Inc. Cut-to-length apparatus for bias-cut tire belt ply material. 3,732,767, Cl. 83-171.000.

Habostad, Arne. Paint roller and tray and cleaner therefor. 3,732,593, Cl. 15-257.006.

Haeusler, Jochen; and Wagnerberger, Wolfgang, to Siemens Aktiengesellschaft. Digital pulse sequence divider. 3,733,475, Cl. 235-156.000.

Hagar, Robert A., to Machlett Laboratories, Incorporated, The. Gateable image intensifier tube. 3,733,492, Cl. 250-213.0vt.

Hagemann, Gilbert M.: *See—*
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Haigh, Henry A., to Haigh Plastic Products Corporation. Seal assembly. 3,733,079, Cl. 277-184.000.
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Hailes, Laurence: *See*—
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Haley, John H.: *See*—
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Haley, Thomas John; Merrick, Thomas Bennett; and Ronne, James Sayre, to Bell Telephone Laboratories, Incorporated. Carrier supply for frequency division multiplexed systems. 3,733,438, Cl. 179-15.0fd.
Hall, Mitchell A., to Monach Tool & Manufacturing Company. Coin chute construction. 3,732,962, Cl. 194-92.000.
Hall, Robert: *See*—
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Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company. Rolling bearing, e.g. taper roller bearing. 3,733,109, Cl. 308-216.000.
Hama Hamaphot, K.G.: *See*—
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Hamilton, Douglas D.; Boivin, Joseph J. R.; and Benedetto, Domenico, 1/3 to Canadian International Paper Company, 1/3 to Quebec North Shore Paper Company and 1/3 Abitibi St. Anne Paper Ltd. Modified processor and components. 3,732,904, Cl. 144-3.00d.
Hammann, Ingeborg: *See*—
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Hammond, Peter George Henry, to Bunker-Ramo Corporation, The. Electrical two-part connectors. 3,733,577, Cl. 339-91.00r.
Hanak, Joseph John; and Russell, John Patrick, to RCA Corporation. Sputter-etching technique for recording holograms or other fine-detailed relief patterns in hard durable materials. 3,733,258, Cl. 204-192.000.
Hanft, Herbert, to Westinghouse Electric Corporation. Variable output resonator coupling loop having shorted turn mounted about flexible connecting conductor. 3,733,566, Cl. 333-82.00b.
Hank, Aaron J., Jr. Device for attaching a hook to a spaced object. 3,733,097, Cl. 294-19.00r.
Hanke, Rudolph, to Hama Hamaphot, K.G. Adhesive splicing element and method of splicing. 3,733,240, Cl. 161-102.000.
Hanley, Hope, to Burroughs Corporation. Sandwich embroidery frame. 3,732,638, Cl. 38-102.910.
Hans, Waldemar: *See*—
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Hansen, Kenneth N.: *See*—
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Hansen, Kenneth N., to Allis-Chalmers Manufacturing Company. Mounting of protective bars on main frame. 3,733,103, Cl. 296-35.00r.
Harbeck, Martin E.: *See*—
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Harlan, Jerry C.; and Angus, William A., to TRW Inc. Tapered roller bearing assembly with antifriction molded cage. 3,733,111, Cl. 308-218.000.
Harowe Servo Controls, Inc.: *See*—
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Harris, Frederick John; and Raitt, John Stewart, to Scottish Agricultural Industries, Limited. Plant foods. 3,733,192, Cl. 71-77.000.
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Hartleib, Franz, to Maschinenbau Aachen-Furstayau Gesellschaft mit beschrankter Haftung, Firma. Method of and device for packing articles. 3,732,789, Cl. 93-82.000.
Hartmann, Helmut; and Stein, Werner, to Henkel & Cie G.m.b.H. Continuous process for the separation of mixtures of fatty acid esters of different melting points. 3,733,343, Cl. 260-428.000.
Hartranft, George E.: *See*—
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Harzer, Peter, to Wandel u. Goltermann Elektronische Prazisionsmessgerate. System for measuring instantaneous frequency values. 3,733,549, Cl. 324-79.00d.
Hasselblad, Fritz Victor: *See*—
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Hata, Kotaro; and Fujii, Toshikazuo, to Matsushita Electric Industrial Co., Ltd. Brake means for a bicycle. 3,732,951, Cl. 188-24.000.
Hatay, Charles, to Decauville. Free cable winch. 3,732,598, Cl. 24-68.00d.
Haubein, Albert H., to Hercules Incorporated. Use of N-α-dialkoxyphosphinothioacetyl-N-methylcarbamates of phenols as insecticides and acaricides. 3,733,406, Cl. 424-211.000.
Haulotte, Georges. Pulley blocks for hoisting. 3,733,053, Cl. 254-192.000.
Haupt, Robert C.: *See*—
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Hayashi, Izuo, to Bell Telephone Laboratories, Incorporated. High power, fundamental transverse mode operation in double heterostructure lasers. 3,733,561, Cl. 331-94.50h.
Haydon, Arthur W., to Tri-Tech, Inc. Clock mechanism. 3,732,685, Cl. 58-26.000.
Hayner, Paul F., to Sanders Associates, Inc. Flow-pressure control valve system. 3,732,887, Cl. 137-486.000.
Haynes, Stewart, Jr.: *See*—
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Healey, Gerald F.; and Nirschl, Joseph C., to United States of America, Army. Proximity detector and alarm utilizing field effect transistors. 3,733,597, Cl. 340-258.00d.
Heard, Charles Bean, Jr.: *See*—
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Heckendorf, Howard A., to General Motors Corporation. Omnidirectional spensor. 3,732,844, Cl. 116-114.0ah.
Hedco, Inc.: *See*—
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Heid, Robert H. Quick change automatic transmission band and bracket assembly. 3,732,954, Cl. 188-259.000.
Heineck, Joseph B.; and Schwab, James J., to Boeing Company, The. Solid state cool gas generator. 3,733,180, Cl. 23-281.000.
Heinz, Werner. Operational viscosimeter. 3,732,724, Cl. 73-59.000.
Held, Manfred; and Spies, Johann, to Bolkow Gesellschaft mit beschrankter Haftung. Electrical igniter or fuse. 3,732,823, Cl. 102-70.20r.
Heller, Paul R.; and Gehani, Ram T., to Westinghouse Electric Corporation. Sealing means for liquid cooled rotors for dynamoelectric machines. 3,733,501, Cl. 310-54.000.
Hellwarth, George A.; and Milton, James E., to International Business Machines Corporation. Analog-to-digital converter circuits. 3,733,600, Cl. 340-347.0nt.
Hendel, Hans W.; Chen, Francis F.; Chu, Tsu-Kai; Furth, Harold P.; Perkins, Francis W.; Simonen, Thomas C.; and Taylor, John B., to United States of America, Atomic Energy Commission. Plasma control by feedback. 3,733,248, Cl. 176-3.000.
Hendricks, Grover E. Ball anvil primer. 3,732,820, Cl. 102-45.000.
Hendry, James W., to Sund-Borg Machines, Corporation, mesne. Apparatus for molding plastic sheet. 3,733,157, Cl. 425-149.000.
Henes, Richard W. Apparatus and method for producing oxygenated gaseous fuels. 3,733,185, Cl. 48-144.000.
Henkel & Cie G.m.b.H.: *See*—
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Henry, David W.; and Colwell, William T., Jr., to United States of America, Army. Nitrothiophenes. 3,733,319, Cl. 260-240.00a.
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Herbener, Henry M. Foundation garments having resilient control units. 3,732,870, Cl. 128-533.000.
Hercules Incorporated: *See*—
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Hermann, Lorin E., to Concrete Pipe Machinery Company. Wear surface for concrete pipe machine long bottoms. 3,733,163, Cl. 425-262.000.
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Hesslein, Robert J.; and Chamberlin, Robert W. Remnant retractor collet. 3,733,081, Cl. 279-46.000.
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Hickner, Richard A., to Dow Chemical Company, The. Thermoset resins from glycidol and a cyclic anhydride. 3,733,311, Cl. 260-78.4ep.
Hiersteiner, Walter L., to Tension Envelope Corporation. Easy opening envelope. 3,733,025, Cl. 229-85.000.
Higashi, Fukuji: *See*—
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Higuchi, Takeru; and Leeper, Harold M., to Alza Corporation. Osmotic dispenser. 3,732,865, Cl. 128-260.000.
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Hill, William Frank. Control circuits for vehicle window lift mechanism. 3,733,532, Cl. 318-266.000.
Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kroneberg, Hans-Gunther, to Bayer Aktiengesellschaft. Acylated N-(alkylaminoalkyl)-aminopyridines. 3,733,331, Cl. 260-293.540.
Hinnergardt, Larry C.; and Tuomy, Justin M., to United States of America, Army. Method and apparatus for testing the tenderness of meat. 3,732,727, Cl. 73-81.000.
Hinoshita, Shieghiko: *See*—
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Hodson, Stuart Arthur; and Marshall, John, to National Research Development Corporation. Microtome knife mount. 3,732,768, Cl. 83-171.000.
Hoehn, Hans; and Bernstein, Jack, to Squibb, E. R., & Sons, Inc. Pyrazolo[3,4-b]pyridine-5-carboxamides. 3,733,328, Cl. 260-293.600.
Hoffman, George W., to N L Industries, Inc. Process of preparing high silica Faujasite. 3,733,391, Cl. 423-118.000.
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Hohwiller, Frieder; Koehling, Klaus; Schneider, Walter; and Lpemog. Dietrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Pavement and railroad bed construction with light concrete sublayer. 3,732,791, Cl. 404-31.000.
Holland, Frank H., Jr., to Eastman Kodak Company. Photomultiplier tube circuit. 3,733,491, Cl. 250-207.00r.
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Holty, David W.; and Kekish, George T., to Nalco Chemical Company. Compositions for pigmented paper coatings which contain styrene-acrolein polymers. 3,733,286, Cl. 260-17.45t.
Honbo, Keizo, to Nippon Denko Kabushiki Kaisha. Method for the manufacture of alkali chromate from a chrome ore. 3,733,389, Cl. 423-53.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Hondrea, Iosif, to Iprofil-"Tehnolemn"-Industria Produselor Finite din Lemn. Slide rule of general use of pocket size. 3,733,470, Cl. 235-70.00r.
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Hopkins, Walker L.; White, William D.; and Champion, Luther F., to Texaco Development Corporation. Means and method for automatically controlling the hydrogen to hydrocarbon mole ratio during the conversion of a hydrocarbon. 3,733,476, Cl. 235-151.120.
Horrom, Bruce Wayne, to Abbott Laboratories. Disubstituted propionamides. 3,733,339, Cl. 260-340.500.
Horst, Elias. Sweeper. 3,732,590, Cl. 15-49.00r.
Horvath, Tibor. Connecting links. 3,732,688, Cl. 59-85.000.
Horvay, Julius B.; and Magester, Earl H., to General Electric Company. Refrigerator door construction. 3,732,646, Cl. 49-487.000.
Housego, Leonard J. Road surfacing apparatus. 3,733,105, Cl. 299-37.000.
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Hudimac, George S., Jr., to Mechanical Service Co., Inc. Electrical control unit. 3,733,495, Cl. 307-108.000.
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Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., to Cole National Corporation. Key vise. 3,732,781, Cl. 90-13.050.
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Jefferson Chemical Company, Inc.: *See—*
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Johnson, Elmer W. Cartridge. 3,732,826, Cl. 102-92.700.
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Kadoya, Yoshiki, to Kyowa Electronic Instruments Co., Ltd. Device for measuring mechanical deviation at remote location. 3,733,134, Cl. 356-152.000.
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Kakei, Takehiko: *See—*
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Kalmus, Henry P. Acoustic doppler wave recognition. 3,733,581, Cl. 340-1.00r.
Kalopissis, Gregoire; and Manoussos, Georges, to Societe Anonyme dite: L'Oreal. Amniotic liquid for conditioning the hair. 3,733,402, Cl. 424-70.000.
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Kao, Chih-Yu, to Bell Telephone Laboratories, Incorporated. Adjustable equalizer control apparatus. 3,733,564, Cl. 333-18.000.
Kapiloff, Anita L. Unitary hinged plastic protector for opened shelf-storage type boxes. 3,733,022, Cl. 229-7.00r.
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Kato, Tomezo. Vibration-responsive apparatus. 3,733,598, Cl. 340-261.000.
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Kavanagh, Arthur. Fishing rod. 3,732,644, Cl. 43-22.000.
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Keller, Anthony T. Anti-jackknifing assembly. 3,733,090, Cl. 280-432.000.
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Kerst, Al F., to Monsanto Company. Methods of scale inhibition. 3,733,270, Cl. 210-58.000.
Khodkevich, Viktor Nilolaevich: *See*—
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Kiessling, Rudolf H., to Square D Company. Electric switch assembly for control stations having rectilinearly or rotatably movable switch operators located at different centers. 3,733,451, Cl. 200-168.00r.
Kildishev, Vasily Semenovich: *See*—
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Kilian, Franz Peter: *See*—
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Killion, Derling G.; and Shacklock, Floyd B., to Ryan Aeronautical Company. Electromagnetic horn with moveable vane for generating monopulse radiation patterns. 3,733,610, Cl. 343-786.000.
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Kirk, Donald, Jr.; and Coryell, Austin S., to Television Communications Corporation. Electronic communication apparatus employing encripted signal distribution. 3,733,431, Cl. 178-5.100.
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Kishikawa, Naoto: *See*—
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Klebe, Johann F.; Wroblewski, Henry A.; and Gilbert, Alfred R., to General Electric Company. Trimellitimido alkyl substituted aromatic carbocyclic organic polymers and a method for making same. 3,733,302, Cl. 260-47.0et.
Klein, Bernard, to Hoffmann-La Roche Inc. Methods and compositions for the determination of uric acid in blood. 3,733,177, Cl. 23-230.00b.
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Kneebone, Clarence H. Lock means for relatively slidable closures. 3,732,709, Cl. 70-90.000.
Knollmueller, Karl O., to Olin Corporation. Method for preparing polycarboranylenesiloxane polymers. 3,733,298, Cl. 260-46.50e.
Knopf, George S., to Bendix Corporation, The. Method of making a precision positioning apparatus. 3,732,608, Cl. 29-407.000.
Kobayashi, Ikuo; Tomizawa, Takao; and Murase, Shigeo, to Matsushita Electric Industrial Co., Ltd. Gas burner. 3,733,170, Cl. 431-329.000.
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Koch, Paul L.; and Maxwell, James C., to Carter's Ink Company, The. Electrode and terminal structure for non-impact printer. 3,733,613, Cl. 346-74.00e.
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Kollinger, Robert A. Trailer jack. 3,733,051, Cl. 254-94.000.
Konig, Helmut. Dough portioning and kneading machine. 3,733,058, Cl. 259-185.000.
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Kose, Akira; and Kobayashi, Yoko, to Zaidan-Hojin Oyo Kogaku Kenkyujo. Iridescent material and method making the same. 3,733,372, Cl. 260-886.000.
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Kraus, Helmut; Fadler, Kurt; and Riese, Hans-Walter, to Fichtel & Sachs A.G. Clutch assembly. 3,732,958, Cl. 192-70.300.
Kraus, Kurt A.; and Mahlman, Harvey A., to United States of America, Atomic Energy Commission. Cross-flow filtration process for removal of total organic carbon and phosphates from aqueous sewage effluents. 3,733,265, Cl. 210-23.000.
Krehbiel, Vivian D. Fluid-filled bed. 3,732,585, Cl. 5-348.0wb.
Kriedt, Frederick A.; Sundstrom, Thomas H.; and Walko, Richard. Submersible salvage unit and method of operation. 3,732,838, Cl. 114-16.00e.
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Kristof, Dezso S., to Caloric Corporation. Ventilating hood and blower device therefor. 3,732,802, Cl. 98-115.00k.

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La Barge, Robert L., to Aluminum Company of America. Adjustable locking assembly. 3,732,659, Cl. 52-461.000.

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Lakritz, Leon. Apparatus for the uniform addition of soluble materials to cigarettes. 3,732,872, Cl. 131-133.00r.

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Lefkowitz, Issai; Ralph, William J.; Lenton, Donald R.; Nabreski, Benjamin D.; and Fox, David, to United States of America, Army. Means for converting impulse linear acceleration to rotational inertia. 3,732,824, Cl. 102-78.000.

Lehneis, Hans Richard, to New York University. Serrated resilient joint orthotic device. 3,732,861, Cl. 128-80.00e.

Leighton, Stephen Beecher, to United States of America, Health, Education, and Welfare. Collimator for binocular instruments. 3,733,132, Cl. 356-138.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
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Lengstorf, Clifford M. Internal heating device for air valves. 3,733,459, Cl. 219-201.000.

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Levin, Maxine G. Cup having illusion of emptying contents. 3,733,071, Cl. 272-8.00r.

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Modan, Michael M. Separation and recovery of catalyst residue. 3,733,301, Cl. 260-47.0et.
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Molins, Desmond Walter; and Labbe, Francis A. M., to Molins Machine Company Limited. Method and apparatus for making cigarettes. 3,732,871, Cl. 131-84.00c.
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Molloy, Edward W.; and Williams, Charles K., to General Motors Corporation. Method of manufacturing drawn cup bearing races with crowned pathways. 3,732,836, Cl. 113-117.000.
Molnar, Laszlo A., to North American Rockwell Corporation. Capture combination system. 3,733,593, Cl. 340-172.500.
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Money, Maxine E. Bacteriostatic sanitary napkin. 3,732,867, Cl. 128-290.00r.
Monsanto Company: *See—*
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Moody, Larry D., to Western Electric Company. Method of applying a waterproofing jelly-like compound to an elongated strand and forming a sheath about the strand. 3,733,225, Cl. 156-48.000.
Moon, Jacob R., to Moon Water Saver, Inc. Water saving cup device for toilet tanks. 3,732,577, Cl. 4-18.000.
Moon, Jerry W. Refuse compactor. 3,732,805, Cl. 100-226.000.
Moon Water Saver, Inc.: *See—*
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Moran, James H.; Bakamjian, Barkev Y.; and Muricchio, Thomas, to Schlumberger Technology Corporation. Cement evaluation logging. 3,732,947, Cl. 181-.5ac.
Morgan, Robert D., to Carrier Corporation. Refrigeration system including refrigerant metering means. 3,732,704, Cl. 62-202.000.
Mori, Eiko: *See—*
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Mori, Yoichi, to Nissan Motors Company, Limited. Electronic governor for automotive automatic transmission. 3,732,754, Cl. 74-866.000.
Morimoto, Teruo: *See—*
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Morris, Horton Harold; McMahan, J. Raymond; and Rogers, William I., to Hooker Chemical Corporation. Fine media milling process. 3,733,355, Cl. 240-27.000.
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Thomson, Richard N.; Osmalov, Jerome A.; and Mathe, George L., 3,733,246.
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McGhay, Maynard H.; and Afendras, Demetrios G., 3,733,608.
Mould, Henry Manifold, to Perkin-Elmer Limited. Optical beam switching devices utilizing a pair of plane mirrors. 3,733,131, Cl. 356-100.000.
Moziek, John, to Monsanto Company. Apparatus for minimizing strand drop-off. 3,733,153, Cl. 425-71.000.
Muller, Ernest. Method and apparatus for producing high hydraulic pressure, particularly for operating a forging press. 3,732,691, Cl. 60-51.000.
Muller, Helmut, to Rheinmetall G.m.b.H., Firma. Hollow charge with an insert of progressive or degressive wall. 3,732,816, Cl. 102-24.0hc.
Muller, Jacques. Filling device for preventing overflow of liquid-containing tanks. 3,732,902, Cl. 141-198.000.
Mullins, John W. Copper tube service valve. 3,732,886, Cl. 137-318.000.
Munch, Otto R., to Johnson Service Company. Fluidic linear accelerometer. 3,732,883, Cl. 137-81.500.
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Murtin, Fernand R. C., to Societe Industrielle d'Electronique et d'Informatique. Injection-control system for internal-combustion engine. 3,732,854, Cl. 123-32.0ea.
Mushrush, George W. Adjustable electromagnetic vibrator. 3,733,500, Cl. 310-17.000.
N L Industries, Inc.: *See—*
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Nabreski, Benjamin D.: *See—*
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Nakagoshi, Kazuo: *See—*
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Nakamura, Kei. Film packaging machine. 3,732,666, Cl. 53-182.000.
Nakanishi, Taro; and Kameo, Nobumitsu, to Nitsubishi Jukogyo Kabushiki Kaisha. Lift loader. 3,732,970, Cl. 198-154.000.
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Navsky Mashinostroitelny Zavod imeni V.I.: *See—*
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Neild, Peter J., to MacMillan Bloedel Limited. Log carriage apparatus. 3,732,772, Cl. 83-730.000.
Neloon, Wayne E. Wheelchair weighing platform. 3,732,938, Cl. 177-126.000.
Nelsson, Nels, to United States Gypsum Company. Demountable partition assembly and studs therefor. 3,732,657, Cl. 52-241.000.
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Nissan Motor Company, Limited: *See—*
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Nordstrom, Lars Vilhelm; Nilsson, Anders Johan; Nilsson, Mats Erik; and Persson, Sven Roland, to Rinipa AB. Air conditioning plant for buildings. 3,732,703, Cl. 62-324.000.
Norell, Harold E. Energy beam generator. 3,732,692, Cl. 60-70.000.
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Nystrom, Signar; and Larsson, Gosta, to Pitea Maskin-Industri. Device for separating small pieces from a work piece of material. 3,732,907, Cl. 144-176.000.
Oates, John E. Delivery of liquids into containers. 3,732,903, Cl. 141-237.000.
Obenshain, David Noel, to Westvaco Corporation. Floating jogger. 3,733,070, Cl. 271-89.000.
O'Connor, Sean J.; and Tefft, Franklin A., to United Aircraft Corporation. Feel augmentation control system for helicopter. 3,733,039, Cl. 244-77.00d.
Ogiso, Mitsutoshi; Itani, Takashi; and Takahashi, Kiyoshi, to Canon Kabushiki Kaisha. Film-tape synchronization system. 3,733,117, Cl. 352-22.000.
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Okuda, Shigekazu. Umbrella. 3,732,879, Cl. 135-20.000.
Oldenburg, Kenneth F., to Litton Business Systems, Inc. Ribbon inking means in keyboard controlled selective printing machines. 3,732,811, Cl. 101-96.000.
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Oliver, Donald L., to Infotronics Corporation. Digital readout system for analytical measuring instruments. 3,733,601, Cl. 340-347.0ad.
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Olsen, Howard E.; and Petry, Robert J., to General Motors Corporation. Electrohydraulic transmission control. 3,732,753, Cl. 74-866.000.
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Panhard, Jean, to Societe de Constructions Mecaniques Pathard and Levassor. Automobile vehicles driven by a rotary piston engine. 3,732,943, Cl. 180-55.000.
Pappas, Michael; Witte, Paul A.; and Johnson, Thomas, to Falcon Safety Products, Inc. Intrusion alarm. 3,732,843, Cl. 116-86.000.
Parekh, Amritlal C.; and Jung, David H., to Research Corporation. Reagent for the solubilization of cholesterol. 3,733,279, Cl. 252-363.500.
Parish, Roger C.; and Trei, John E., to Smith Kline & French Laboratories. Methods and compositions for improving feed efficiency of ruminants using polyhaloalkamines. 3,733,417, Cl. 424-322.000.
Park, Kyo C.: *See—*
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Parker, Laurence J., 1/4 to Chiga, George C. Pump protection system with pressure responsive switch and float valve. 3,733,449, Cl. 200-81.00r.
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Perri, Joseph, to Union Commerce Bank, The, mesne. Method for lining a hot top casing with insulating panels and ring. 3,732,610, Cl. 29-463.000.
Perrine, Walter E. Under-center gun toggle mechanism with toggle biasing means at given position. 3,732,779, Cl. 89-189.000.
Perry, Eli; and Strazik, William F., to Monsanto Company. Process for the separation of styrene from ethyl benzene. 3,733,367, Cl. 260-669.00a.
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Nordstrom, Lars Vilhelm; Nilsson, Anders Johan; Nilsson, Mats Erik; and Persson, Sven Roland, 3,732,703.
Peters, Johannes, to Bolkow Gesellschaft mit beschrankter Haftung. System for the interference-free radio transmission of signals. 3,733,552, Cl. 325-122.000.
Petreev, Anatoly Mikhailovich: *See—*
Sudnishnikov, Boris Vasilievich; Kostylev, Alexander Dmitrievich; Petreev, Anatoly Mikhailovich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; and Klimashko, Vladimir Vasilievich, 3,732,936.
Petrick, John T.; and Bailey, Milton, to United States of America, Navy. Method for evaluating electrostatic prospensity of fabrics and soft sheeting materials. 3,732,544, Cl. 324-32.000.
Petrocci, Alfonso N.: *See—*
Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N., 3,733,421.
Wakeman, Reginald L.; Shay, Edward G.; and Petrocci, Alfonso N., 3,733,420.
Petrolite Corporation: *See—*
Burns, William F., 3,733,272.
Petros, Andrew J.; and Minteer, James M., to Mesta Machine Company. Thrust mechanism for a mill roll bearing assembly and the like. 3,733,108, Cl. 308-236.000.
Petrovick, Mathew L., to United States of America, Health, Education, and Welfare. Fluidic heart sound synthesizing techniques and apparatus. 3,732,631, Cl. 35-17.000.
Petry, Robert J.: *See—*
Olsen, Howard E.; and Petry, Robert J., 3,732,753.
Pettit, Glenn A., to Rosemount Inc. Plastic extruder temperature control system. 3,733,059, Cl. 259-191.000.
Pfizer Inc.: *See—*
Shovers, John; and Sandine, William E., 3,733,205.
Pflaum, Andre Joseph, to Societe des Fonderies de Pont-a-Mousson. Control device for the stopper-rod of a foundry pouring vessel. 3,733,014, Cl. 222-504.000.
Pharis, Joe M.: *See—*
Adams, Frank H.; and Pharis, Joe M., 3,733,261.
Pharmacia AB: *See—*
Bjork, Lars; Erikson, Uno Eugen; Granath, Kirsti Annikki; Ingelman, Bjorn Gustav-Adolf; and Lindberg, Bernt Jabes, 3,733,397.
Philadelphia Quartz Company: *See—*
Vessey, Eric W., 3,733,278.
Phillippi, Charles G. Apparatus for producing a continuous countercurrent effect. 3,732,984, Cl. 210-289.000.
Phillips Petroleum Company: *See—*
Marwil, Stanley J.; and Harrison, Roy C., 3,733,314.
Munro, Bradley L., 3,733,273.
Stoller, Frederick L., 3,733,226.
Pickel, James M. Tree stump removing apparatus. 3,732,905, Cl. 144-2.00n.
Pickett, William H. Barrier structures and connectors in concrete assemblies. 3,732,653, Cl. 52-71.000.
Pierret, Jean Marc, to International Business Machines Corporation. Equalizer for linearizing a transmission channel phase-frequency response utilizing odd and even order all-pass networks. 3,733,565, Cl. 333-28.000.
Pierson, William Grant: *See—*

Becker, Joseph Gerald; Mitchell, Robert Lee; and Pierson, William Grant, 3,733,399.

Pietro, Rosso, & C. S. n.c.: *See*—
Rosso, Pietro, 3,732,832.

Pilipovich, Donald; Wilson, Richard D.; and Bauer, H. Fred, to North American Rockwell Corporation. Oxychlorine trifluoride and alkali fluoride-Cl_3O complex. 3,733,392, Cl. 423-179.00r.

Pilkington Brothers Limited: *See*—
Lawrenson, Jack; and Silverwood, Frederick William, 3,733,190.

Pillsbury Company, The: *See*—
Marmor, Ralph A., 3,733,202.
Wooden, Robert P.; and Page, William G., 3,733,277.

Pines, Seemon H.; Jamieson, Norman C.; and Kozlowski, Matthew A., to Merck & Co., Inc. Antibiotic purification processes. 3,733,320, Cl. 260-243.00c.

Pitea Maskin-Industri: *See*—
Nystrom, Signar; and Larsson, Gosta, 3,732,907.

Pitney-Bowes, Inc.: *See*—
Beeken, Basil B., 3,733,580.

Pitti, Joseph J.; and Tassone, George A., to Atreo Manufacturing Co., Inc. Pool cover. 3,732,581, Cl. 4-172.120.

Pitts, Felix L.; and Spencer, John L., to United States of America, National Aeronautics and Space Administration. Electronic strain-level counter. 3,733,424, Cl. 73-88.50r.

Pitts, Robert W. Packaging apparatus for packaging continuous production of a discrete product in predetermined quantities. 3,732,665, Cl. 53-62.000.

Pitts, Robert William, Jr.: *See*—
Arnold, Dan McCay; and Pitts, Robert William, Jr., 3,733,486.

Piziks, Henry I., to General Motors Corporation. Gearshift arrangement. 3,732,747, Cl. 74-487.000.

Plampin, James Nelson: *See*—
Meshino, Joseph Albert; and Plampin, James Nelson, 3,733,364.

Pletz, Murray J., to K2 Corporation, mesne. Adjustable pack frame. 3,733,017, Cl. 224-8.00r.

Plumb, Edwin W. Blanking die stripping system. 3,732,762, Cl. 83-98.000.

Ply & Gem Industries, Inc.: *See*—
Margolis, Bern; and Saunders, Irving B., 3,732,633.

Poirier, Arthur L., to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence. Microstrip circulator wherein related microstrip patterns are disposed on opposing surfaces of dielectric substrate. 3,733,563, Cl. 33-1.100.

Pokhodnya, Igor Konstantinovich; Golovko, Vladimir Nikolaevich; and Suptel, Alexandr Mikhailovich. Flux cored electrode. 3,733,458, Cl. 219-146.000.

Pollack, Elliot S.: *See*—
Pollack, Herman G., 3,732,578.

Pollack, Herman G., 1/2 to Pollack, Elliot S. Diagnostic and interfacial pad for use with the socket of a prosthetic device. 3,732,578, Cl. 3-19.000.

Polulyakh, Valentin Stepanovich; Khodkevich, Viktor Nilolaevich; Yakovenko, Viktor Grigorievich; and Kildishev, Vasily Semenovich. Device for detecting faults in rotary electric circuits of brushless exciters of synchronous machine. 3,733,518, Cl. 317-13.0r.

Polychrome Corporation: *See*—
Graham, Robert C., 3,732,808.

Poncy, George W. Sterile package for clinical thermometers and the like and method of making it. 3,732,975, Cl. 206-63.200.

Porath-Furedi, Asher. Method and apparatus for measuring the degree of asymmetry of non-spherical particles. 3,733,136, Cl. 356-197.000.

Porret, Daniel: *See*—
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,733,282.

Porta, Paolo Della; and Rebaudo, Mauro, to S.A.E.S. Getters S.p.A. Mercury generation. 3,733,194, Cl. 75-.50r.

Porter, John H.; and Swift, Robert O., to Ametek, Inc. Motor-fan unit for moving wet working air. 3,733,150, Cl. 417-424.000.

Porter, Kurt: *See*—
Masrrodonato, Alfred; Porter, Kurt; and Rhoads, Robert R., 3,732,616.

Posh, Raymond C., to Lear Siegler, Inc. Differential drive assembly. 3,732,750, Cl. 74-650.000.

Posselt, Klaus: *See*—
Thiele, Kurt; and Posselt, Klaus, 3,733,340.

Post Office, The: *See*—
Merlo, David, 3,733,585.

Potter, Frederick Milton, to Bendix Corporation, The. Oil spray cooled, brushless, variable speed direct current generator. 3,733,503, Cl. 310-68.000.

Pouderoux, Pierre, to Stein Industrie. Heat-exchanger module. 3,732,922, Cl. 165-158.000.

Poulton, Curt A.: *See*—
Kraayenhof, Hans; and Poulton, Curt A., 3,732,963.

Pourrias, Bernard M.: *See*—
Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,733,324.

Powell, Robert L., mesne: *See*—
Rohats, Frank J., 3,733,461.

PPG Industries, Inc.: *See*—
Jensen, Thomas H., 3,733,188.
Tarnopol, Milton S.; Twells, Robert G.; and Rigby, Ronald R., 3,732,792.
Wolff, Bernhard B., 3,733,237.
Zurheide, George B.; and Shealy, Robert G., 3,733,189.

Press, Irving D., to Resistoflex Corporation. Constrictable tube valve. 3,733,046, Cl. 251-8.000.

Pressley, Thomas A.: *See*—
Bishop, Dolloff F.; Cassel, Alan F.; and Pressley, Thomas A., 3,733,266.

Price, Warren H., to Gilson Bros., Co. Tractor subassembly. 3,732,940, Cl. 180-64.00r.

Prittie, Allan R. Label inspection slitter/rewinder. 3,733,230, Cl. 156-64.000.

Procter & Gamble Company, The: *See*—
Gupta, Monoj K.; and James, William M., 3,733,209.
Seiden, Paul, 3,733,210.

Produmatic: *See*—
Cottin, Jean Claude, 3,732,757.

Prouty, Robert E.; and Graf, Robert E., to Essex International, Inc. Push button relay. 3,733,568, Cl. 335-186.000.

Puls, Walter: *See*—
Behner, Otto; and Puls, Walter, 3,733,333.

Pulse Engineering Inc.: *See*—
Kent, Bryan; and Kent, Duane, 3,732,901.

Puri, Jagdish M.: *See*—
Reynolds, Don E.; O'Neill, Daniel R.; and Puri, Jagdish M., 3,733,523.

Quebec North Shore Paper Company: *See*—
Hamilton, Douglas D.; Boivin, Joseph J. R.; and Benedetto, Domenico, 3,732,904.

Quinlan, Joseph B.; and Van Arstdalen, Earl F., to United States of America, Army. Simultaneous axially and radially ignited caseless telescopic tube ammunition round. 3,732,819, Cl. 102-40.000.

Rabinovich, Vyacheslav Anatolievich: *See*—
Nabiullin, Faat Khatovich; Buzova, Zoya Mikhailovna; Gertsik, Efim Mikhailovich; Marfin, Boris Vasilievich; Rabinovich, Vyacheslav Anatolievich; and Koval, Ivan Ivanovich, 3,732,607.

Rabner, Walter P. Tissue containing box holder. 3,733,044, Cl. 248-313.000.

Rachner, Horst: *See*—
Schuster, Siegfried; Kilian, Franz Peter; and Rachner, Horst, 3,732,839.

Rackson, Chester B. Control system for dental drill operation. 3,732,622, Cl. 32-22.000.

Radiation Incorporated: *See*—
Bartlett, Homer E., 3,733,609.

Rainone, Nicholas J.; and De Caro, Aristide R., to Westinghouse Electric Corporation. Halogen-cycle incandescent lamp having an improved filament mount assembly. 3,733,508, Cl. 313-183.000.

Raitt, John Stewart: *See*—
Harris, Frederick John; and Raitt, John Stewart, 3,733,192.

Ralph, William J.: *See*—
Lefkowitz, Issai; Ralph, William J.; Lenton, Donald R.; Nabreski, Benjamin D.; and Fox, David, 3,732,824.

Ram, Michael J.; and Reynolds, Thomas K., to Celanese Corporation. Fiber package comprising overlying wraps of a fibrous tape. 3,732,974, Cl. 206-59.00a.

Rawl, Henry J.: *See*—
Bolling, Robert W., Jr.; McCall, Frank S.; and Rawl, Henry J., 3,733,024.

Raymond, Robert, to Societe Franco-Hispano-Americaine(Francispam). Gas-fueled lighters. 3,733,167, Cl. 431-143.000.

Raynaud, Guy M.: *See*—
Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,733,324.

Raytheon Company: *See*—
Bouchard, Kenneth G.; and Teich, Wesley W., 3,733,462.

RCA Corporation: *See*—
Hanak, Joseph John; and Russell, John Patrick, 3,733,258.
Thorpe, Laurence Joseph, 3,733,559.

RCA Corporation, mesne: *See*—
Thompson, John R.; and Schoenbeck, Robert L., 3,733,430.

Reader, Arthur J. Method and apparatus for sorting and distributing mail. 3,732,978, Cl. 209-122.000.

Reasenberg, Julian R.; and Drucker, Rubin, to Mizzy Inc. 1-Amino cyclohexanemethyl benzoates. 3,733,353, Cl. 260-477.000.

Reavis, Robert P.; Reavis, Robert P., Jr.; and Reavis, Robert P., III. Container lift and dump apparatus. 3,732,997, Cl. 214-302.000.

Reavis, Robert P., III: *See*—
Reavis, Robert P.; Reavis, Robert P., Jr.; and Reavis, Robert P., III, 3,732,997.

Reavis, Robert P., Jr.: *See*—
Reavis, Robert P.; Reavis, Robert P., Jr.; and Reavis, Robert P., III, 3,732,997.

Rebaudo, Mauro: *See*—
Porta, Paolo Della; and Rebaudo, Mauro, 3,733,194.

Reddish, Wilson, to Imperial Chemical Industries Limited. Method of making conducting plastic articles. 3,733,385, Cl. 264-105.000.

Redex: *See*—
Defontenay, Paul; and Lewis, Ian John, 3,732,741.

Regal Games Mfg., Co.: *See*—
Spitzner, Erich A., 3,732,629.

Reick, Franklin G.: *See*—
Schmaus, Siegfried H.A.; and Reick, Franklin G., 3,732,733.

Reid, Kenneth R.: *See*—
Herring, George D.; and Reid, Kenneth R., 3,733,068.

Reiners, Walter: *See*—

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Reliance Electric Company, mesne: *See—*
Young, John T.; Michels, Charles E.; Zimmermann, Thomas C.; and Hagemann, Gilbert M., 3,733,236.

Renard, Lucien: *See—*
van den Hove, Christian; and Renard, Lucien, 3,733,049.

Renner Company, The: *See—*
James, William T., III, 3,733,140.
James, William T., III, 3,733,141.

Research Corporation: *See—*
Parekh, Amritlal C.; and Jung, David H., 3,733,279.

Resistoflex Corporation: *See—*
Press, Irving D., 3,733,046.

Resources, Incorporated: *See—*
Gibson, Elvin H., 3,732,935.

Retention Communication Systems, Inc.: *See—*
Catalano, Paul D.; Buten, Norman; Eash, George H.; and Emanuel, Frank V., 3,733,119.

Rettig, Charles E., to Allis, Louis, Company, The. Adjustable frequency current source power supply of the inverter type. 3,733,543, Cl. 321-2.000.

Reuschel, Heinz: *See—*
Bettermann, Peter; Reuschel, Heinz; and Wolf, Manfred, 3,732,778.

Reynolds, Don E.; O'Neill, Daniel R.; and Puri, Jagdish M., to Ampex Corporation. Electronic circuit card game. 3,733,523, Cl. 317-101.0dh.

Reynolds, Thomas K.: *See—*
Ram, Michael J.; and Reynolds, Thomas K., 3,732,974.

Rheem Manufacturing Company: *See—*
Gerlovich, Albert F.; and Dunbeker, George H., 3,733,384.

Rheinmetall G.m.b.H.: *See—*
Bettermann, Peter; Reuschel, Heinz; and Wolf, Manfred, 3,732,778.

Rheinmetall G.m.b.H., Firma: *See—*
Muller, Helmut, 3,732,816.

Rhoads, Robert R.: *See—*
Masrrodonato, Alfred; Porter, Kurt; and Rhoads, Robert R., 3,732,616.

Rhodes, Alex; and Rose, James, to Ford Motor Company. Lockable steering column assembly. 3,732,710, Cl. 70-239.000.

Riccio, Pasquale R., to Ciba-Geigy Corporation. Air pressure operated dispenser. 3,733,010, Cl. 222-193.000.

Richardson, Edwin Allen, to Shell Oil Company. Plugging solution precipitation time control by charge neutralization. 3,732,927, Cl. 166-294.000.

Richardson, Neal Allen: *See—*
Berman, Baruch; Gelb, George Howard; Richardson, Neal Allen; and Wang, Tsih C., 3,732,751.

Richens, Robert H.: *See—*
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., 3,732,781.

Richmond, Park: *See—*
Fischer, Paul; Richmond, Park; and Wurthmann, Gunther E., 3,733,510.

Richmond, Robert S.: *See—*
Norem, Stanley D.; O'Neill, Michael J.; and Richmond, Robert S., 3,732,722.

Richter Gedeon Vegyeszeti Gyar R. T.: *See—*
Tuba, Zoltan; and Bor, Maria, nee Szabo, 3,733,329.

Richter Gedeon Vegyeszeti Gyar RT: *See—*
Kisfaludy, Lajos; Patthy, Agnes, nee Lukats; Dancsi, Lajos; Fekete, Gyorgy; and Szabo, Istvan, 3,733,358.

Richter, Sidney B.; and Barnas, Eugene F., to Velsicol Chemical Corporation. Method for the control of acarids using 3-halobenzamides. 3,733,414, Cl. 424-300.000.

Ridge, Charles K.; and Allen, Jack R. Overload safety switch apparatus. 3,733,450, Cl. 200-85.00r.

Riese, Hans-Walter: *See—*
Kraus, Helmut; Fadler, Kurt; and Riese, Hans-Walter, 3,732,958.

Riffkin, Charles: *See—*
Cyr, Gilman N.; Riffkin, Charles; and Rifino, Carl B., 3,733,404.

Rifino, Carl B.: *See—*
Cyr, Gilman N.; Riffkin, Charles; and Rifino, Carl B., 3,733,404.

Rigby, Ronald R.: *See—*
Tarnopol, Milton S.; Twells, Robert G.; and Rigby, Ronald R., 3,732,792.

Rike, Richard C.; and Shellhause, Ronald L., to General Motors Corporation. Combination valve assembly with proportioner override. 3,733,106, Cl. 303-6.00c.

Rinaldo, Michael S. Pipe cutting apparatus. 3,732,758, Cl. 82-4.00c.

Rinipa AB: *See—*
Nordstrom, Lars Vilhelm; Nilsson, Anders Johan; Nilsson, Mats Erik; and Persson, Sven Roland, 3,732,703.

Rists Wires and Cables Limited: *See—*
Fry, William Lawrence, 3,733,428.

Ritchie, Frederick Stafford: *See—*
Seeley, John Scott; Smith, Stanley Desmond; and Ritchie, Frederick Stafford, 3,733,217.

Robertshaw Controls Company: *See—*
Murrell, Donald K., 3,732,985.

Robertson, Elmer L., to Ethyl Development Corporation. Method and apparatus for hot stamp printing hollow articles. 3,732,807, Cl. 101-11.000.

Robertson, H. H., Company: *See—*
Payne, Harold J. W., 3,733,232.

Robinsky, Eli I. Roll-up corrugated steel roofing sheet material. 3,732,656, Cl. 52-108.000.

Robinson, Eugene A.; and Shipley, Roy E., to Collins Radio Company. RF microwave power amplifier and carrier. 3,733,525, Cl. 317-234.00r.

Robra, Helmut, to Schloemann Aktiengesellschaft. Securing an extrusion press ram to a thrust member. 3,732,716, Cl. 72-273.000.

Robson, Harry E., to Esso Research and Engineering Company. Promotion of crystalline zeolite synthesis. 3,733,390, Cl. 423-118.000.

Roche, Michel, to Commissariat a l'Energie Atomique. Rotary target for electrostatic accelerator which operates as a neutron generator. 3,733,490, Cl. 250-84.500.

Rockwell Manufacturing Company: *See—*
Fowler, John H., 3,732,923.

Rocquin, Camile J. No-tilt Christmas tree stand. 3,733,040, Cl. 248-48.000.

Roderick, William Rodney, to Abbott Laboratories. Anti-inflammatory methods. 3,733,411, Cl. 424-263.000.

Rodstein, Harvey B. Fiberglass shoe for sanding tools. 3,732,651, Cl. 51-358.000.

Rogers, William I.: *See—*
Morris, Horton Harold; McMahan, J. Raymond; and Rogers, William I., 3,733,355.

Rohats, Frank J., to Powell, Robert L., mesne. Radiant heater. 3,733,461, Cl. 219-343.000.

Rohr, Otto; and von Orelli, Marcus, to Ciba Limited. Molluscicidal trifluoromethyl p-nitro diphenyl ethers. 3,733,422, Cl. 424-340.000.

Rojahn, Fred H. Stringer for a slide fastener. 3,732,601, Cl. 24-205.13d.

Roland, George W.: *See—*
Deis, Daniel W.; and Roland, George W., 3,733,499.

Roland Offenselmaschinenfabrik Faber & Schleicher A.G.: *See—*
Greiner, Harry M.; and Banfer, Hartwig, 3,732,815.

Ronne, James Sayre: *See—*
Haley, Thomas John; Merrick, Thomas Bennett; and Ronne, James Sayre, 3,733,438.

Rood, Robert M. Clothes hanger attachment. 3,733,016, Cl. 223-86.000.

Rood, William H.: *See—*
Lusk, Joe F.; Rood, William H.; and Feldman, Herbert L., 3,733,586.

Rooke, Ralph M.; and Davis, James V., to Fuller Brush Company, The. Thermoplastic container and cover. 3,732,909, Cl. 150-.500.

Rorer, William H., Inc.: *See—*
Diamond, Julius, 3,733,416.

Rosas, Carlos B.: *See—*
Glamkowski, Edward J.; Rosas, Carlos B.; Sletzinger, Meyer; and Wantuck, Joseph A., 3,733,356.

Rose, James: *See—*
Rhodes, Alex; and Rose, James, 3,732,710.

Rose, Joseph K. Viewing shield for display device. 3,733,436, Cl. 178-7.820.

Rosemount Inc.: *See—*
Pettit, Glenn A., 3,733,059.

Roseveare, Ronald Newman: *See—*
Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, 3,733,309.

Ross Controls Corporation: *See—*
Ross, Edward A.; and Baule, Gerhard M., 3,733,529.

Ross, Edward A.; and Baule, Gerhard M., to Ross Controls Corporation. Plural motor tape drive speed control. 3,733,529, Cl. 318-7.000.

Rosso, Pietro, to Pietro, Rosso, & C. S. n.c. and Calzificio Fratelli Protasoni Societa di fatto di Mario e Trento Protasoni. Attaching binding strips to knitwear on linking machines. 3,732,832, Cl. 112-25.000.

Roth, Charles F., Jr., to Xerox Corporation. Method and apparatus for enclosing a lamp. 3,733,123, Cl. 355-3.000.

Rounkles, Rodney G., to Ethyl Development Corporation. Bottle with external compartment. 3,732,999, Cl. 215-6.000.

Roussel-UCLAF: *See—*
Noisy, Andre Queuille; and Fournex, Robert, 3,733,400.

Rouzier, Philippe; and Pelissier, Maurice, to Aluminium Suisse S.A. Valves for pressurized recipients. 3,733,009, Cl. 222-148.000.

Rowe, Lacy A.; and Whitley, John A. Mail box with door opening means. 3,733,026, Cl. 232-35.000.

Rowe, Robert L.; and Peccerill, Donald. Method of producing a tubular magnet. 3,732,617, Cl. 29-608.000.

Rowland, Dan R., to General Motors Corporation. Stop for screw and nut actuator. 3,732,744, Cl. 74-242.80r.

Royer, Thurber W., to United States of America, Army. Nose ogive for nonlethal projectile. 3,732,821, Cl. 102-41.000.

Ruekberg, Herbert S., to Continental Can Company, Inc. Electrostatic molding apparatus for preparing thermoplastic articles. 3,733,158, Cl. 425-174.000.

Ruesch, Erhard: *See—*
Wydler, Robert; and Ruesch, Erhard, 3,732,780.

Russell, John Patrick: *See—*
Hanak, Joseph John; and Russell, John Patrick, 3,733,258.

Rust, Edgar C., Jr.: *See—*
Long, Delmar D.; Rust, Edgar C., Jr.; and Lawrence, Stanley L., 3,733,238.

Rutkowski, Edward J.; and Schneller, Joseph W., to National Gypsum Company. Wallboard attachment. 3,733,231, Cl. 156-71.000.
Ryan Aeronautical Company: *See—*
Killion, Derling G.; and Shacklock, Floyd B., 3,733,610.
Ryan, Patrick W.: *See—*
Thompson, Ronald E.; and Ryan, Patrick W., 3,733,370.
Ryckman, William D., Jr., to General Electric Company. Apparatus for heating dispensed flowable material. 3,733,460, Cl. 219-308.000.
Sabia, Raffaele Antonio: *See—*
Kaufman, Stanley; and Sabia, Raffaele Antonio, 3,733,426.
S.A.E.S. Getters S.p.A.: *See—*
Porta, Paolo Della; and Rebaudo, Mauro, 3,733,194.
Sahlin Engineering Company, Inc.: *See—*
Cagle, Harlan R., 3,732,989.
Saito, Kazo: *See—*
Kida, Nobutoshi; Saito, Kazo; and Furukawa, Junichi, 3,732,882.
Sakamoto, Toemon, to Enshu Limited. Weft feeler mechanism. 3,732,900, Cl. 139-370.000.
Salo, Martin: *See—*
Gallagher, John F.; and Salo, Martin, 3,733,293.
Samson, Jean-Paul, to Bombardier Limited. Runner shoe for snowmobile. 3,732,939, Cl. 180-5.00r.
Sanberger, Ludwig; and Burgstaller, Gottfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Plate heat exchanger from polytetrafluoroethylene. 3,733,244, Cl. 165-166.000.
Sanders Associates, Inc.: *See—*
Hayner, Paul F., 3,732,887.
Sanders, Harry, to Dunlop Holdings Limited. Cutting material into lengths. 3,732,761, Cl. 83-37.000.
Sandine, William E.: *See—*
Shovers, John; and Sandine, William E., 3,733,205.
Sandler, Yehuda L.; and Durigon, Docile D., to Westinghouse Electric Corporation. Gas diffusion electrode. 3,733,221, Cl. 136-120.0fc.
Sandoz Ltd., a/k/a Sandoz AG: *See—*
Berde, Botond, 3,733,423.
Sandoz-Wander, Inc.: *See—*
Frey, Albert J.; and Buzzolini, Mario G., 3,733,418.
Sankyo Company Limited: *See—*
Murayama, Keisuke; Toda, Toshimasa; and Mori, Eiko, 3,733,326.
Sarvay, J. Thomas, to Standard Products Company, The. Store front framing system. 3,732,658, Cl. 52-282.000.
Saslow, Seymour, to Espey Mfg. & Electronics Corporation. Battery charging device. 3,733,534, Cl. 320-23.000.
Sato, Hitoshi: *See—*
Migitaka, Masatoshi; Takahashi, Susumu; Sato, Hitoshi; Nakashima, Hisao; Asai, Shojiro; and Ono, Yuichi, 3,733,527.
Sato, Shigehiko; and Yamatodani, Saburo, to Takeda Chemical Industries, Ltd. Production of bakery products. 3,733,208, Cl. 99-90.00r.
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Susolak, Robert J.; and Bryant, Jack R., to Electronic Memories & Magnetics. Apparatus and method for firing magnetic cores. 3,733,171, Cl. 432-17.000.
Suter, Walter, to United States Steel Corporation. Turnover device. 3,732,990, Cl. 214-1.0qg.
Suzan, Henri: *See—*
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Szita, Frank. Holder and manupulator for refuse bags. 3,733,099, Cl. 294-55.000.
Szymber, Oleg, to GAF Corporation. Random selection system for slide projectors and the like. 3,733,122, Cl. 353-103.000.
Tado, Hiroshi; and Morimoto, Teruo, to Yanmar Diesel Engine Co., Ltd. Compound diesel engine of rotary-piston type. 3,732,689, Cl. 60-15.000.
Tague, Patrick W. Calibrated variable neutral density filter for a camera. 3,732,793, Cl. 95-1.00r.
Tai, Akira: *See—*
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Tarnopol, Milton S.; Twells, Robert G.; deceased (by Twells, Dolores A.; administratrix); and Rigby, Ronald R., to PPG Industries, Inc. Image plane plate. 3,732,792, Cl. 95-1.00r.

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Tateno, Keiji, to Nihon Kohden Kogyo, Ltd. Brain wave measuring apparatus. 3,732,859, Cl. 128-2.10b.

Taube, Robert Otto, to Deere & Company. Side draft control system for a tractor and earthworking implement. 3,732,932, Cl. 172-7.000.

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Thatcher, Raymond Richard James; Ediss, Anthony Gerald Richard; and Wheeler, Brian James, to Worcester Valve Company, Limited. Lever mechanism with variable mechanical advantage. 3,732,749, Cl. 74-518.000.

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Thomanek, Franz R. Explosive body construction. 3,732,817, Cl. 102-24.0hc.

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Thomasian, Harvey A., to Lowell Corporation. Ratchet wrench. 3,732,756, Cl. 81-62.000.

Thompson, John R.; and Schoenbeck, Robert L., to RCA Corporation, mesne. Channel monitoring system. 3,733,430, Cl. 178-5.100.

Thompson, Robert E.; and Le Breton, Ernest, to Schering Corporation. Inhalation coordinated aerosol dispensing device. 3,732,864, Cl. 128-173.00r.

Thompson, Ronald E.; and Ryan, Patrick W., to Atlantic Richfield Company. Unsaturated ester group terminated polydienes as unsaturated polyester modifiers. 3,733,370, Cl. 260-862.000.

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Thomson, Richard N.; Osmalov, Jerome A.; and Mathe, George L., to Morris, Philip, Incorporated. Forming filled continuous plastic rod such as plastic cigarette filter rod filled with a tow of cellulose acetate. 3,733,246, Cl. 161-176.000.

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Thornton, Francis J.; and Westfall, Welton C., to Sunkist Growers, Inc. Device for collecting fruit. 3,732,961, Cl. 193-7.000.

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Thurmer, Geraldine H. Vibrating massage device. 3,732,860, Cl. 128-33.000.

Timmons, Harold L.; and Deitsch, Henry C., to Dow Chemical Company, The. Pump assembly for handling liquid materials. 3,733,151, Cl. 417-424.000.

Tobias, Emil A. Sanitation apparatus. 3,733,098, Cl. 294-19.00r.

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Tourtellotte, John F.; and Villiers-Fisher, John F., to Chemical Construction Corporation. Catalytic exhaust gas treatment apparatus. 3,733,181, Cl. 23-288.00f.

Tranel, Lester J., to Olin Corporation. Method and apparatus for deforming a flat on parts of metal strip-type tubing while leaving other parts undeformed. 3,732,714, Cl. 72-194.000.

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Vogel, Herward A.: *See*—
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Vogelei, Robert A.; Kirkman, Richard W.; and Williams, Alverson B., to General Motors Corporation. Sequentially operating linear actuator. 3,732,784, Cl. 92-65.000.

Volokh, Boris Fedotovich. Apparatus for cleaning loose filtering material in slow water filled water supply filters. 3,732,983, Cl. 210-273.000.

Volpp, Gert P.: *See*—
Chakrabarti, Paritosh M.; and Volpp, Gert P., 3,733,280.

Von Gal, George E., Jr.; Hutchinson, Lawrence H.; and Davis, Oneal W., to Litton Industries, Inc. Stacking machine. 3,732,991, Cl. 214-6.00p.

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Voronin, Alexei Vasilievich: *See*—
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Voyer, Peter Edward: *See*—
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Vrieland, G. Edwin; and Beck, Henry Nelson, to Dow Chemical Company, The. Catalytic oxydehydrogenation of alkyl aromatics and alkyl pyridines. 3,733,327, Cl. 260-290.00v.

Vyzkumny ustav bavlnarsky: *See*—
Jekl, Frantisek; Mateju, Vladimir; Pech, Josef; and Vasek, Vitezslav, 3,732,896.

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Wagner, Hans; and Udluft, Klaus W., to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of 5,6-dihydro-2H-thiopyran-3-carboxaldehyde. 3,733,336, Cl. 260-327.0th.

Wagner, John R.; and Sidbury, Melvin D., to Loew's Theatres, Inc. Smoking machine. 3,732,874, Cl. 131-171.00r.

Wagnerberger, Wolfgang: *See*—
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Wakeman, Reginald L.; Shay, Edward G.; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Biocidal octyldodecyl dimethyl ammonium compounds in hard water solutions. 3,733,420, Cl. 424-329.000.

Waldman, Nathan: *See*—
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Watanabe, Yoshihisa; and Takeda, Makoto, to Mitsubishi Petrochemical Company, Limited. Production of 2-methyleneglutoronitrile. 3,733,351, Cl. 260-465.80d.

Watkins Salt Company: *See*—
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Watson, Joseph P. Ground engaging sickle bar spacer. 3,732,676, Cl. 56-313.000.

Watson, Milton R., to Telex Computer Products, Inc. Dual-voltage feedback comparator for simultaneously monitoring a positive and negative voltage. 3,733,498, Cl. 307-297.000.

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Weinstein, Myron, to Goodyear Aerospace Corporation. Time discriminator circuit for edge tracking target contours. 3,733,434, Cl. 178-6.800.

Welgas, John. Trestle template for power saws. 3,732,906, Cl. 143-51.00a.

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Wertheim, Reinhold Adolf Philipp. Removal of a liquid phase from a material. 3,732,627, Cl. 34-9.000.

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Whittaker, Arthur G., to Aerospace Corporation, The. Process for making chaoite. 3,733,394, Cl. 423-460.000.
Whitworth, Franka D., to Clark Equipment Company. Inboard strike-off blade actuating mechanism. 3,732,637, Cl. 37-124.000.
Wieland, Howard N., to TRW Inc., mesne. Stud welding tool construction. 3,733,457, Cl. 219-98.000.
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Wilkinson, Lester, to General Motors Corporation. Electronic fuel injection system having high speed compensation. 3,732,853, Cl. 123-32.0ea.
Willems, Leonardus Franciscus; Neelen, Joseph Jacobus Marie; and Cardozo, Benjamin Lopes, to U.S. Philips Corporation. Device for the audible reproduction of a cardiogram with speech-like sounds. 3,732,868, Cl. 128-2.06g.
Willette, Edward E.; and Mazur, Conrad F., to Standard Oil Company. Continuous process for making thermoformed articles of manufacture. 3,733,381, Cl. 264-47.000.
Williamitis, Victor A., to General Motors Corporation. Self-cleaning cooking oven. 3,732,857, Cl. 126-19.00r.
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Williamson, T. D., Inc.: *See*—
Vernooy, Burton, 3,732,625.
Wilson, John T., to Westinghouse Electric Corporation. Electrical apparatus with ground fault detector and instantaneous trip circuit. 3,733,517, Cl. 317-18.00d.
Wilson, Joseph R. Heat exchanger. 3,732,919, Cl. 165-110.000.
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Wilson, Raymond F.; Cole, Edward L.; and Peck, Reese A., to Texaco Inc. Treatment of heavy petroleum oils. 3,733,259, Cl. 208-86.000.
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Wirtz, Rainer, to Bosch, Robert, G.m.b.H. Multi-phase thyristor inverter. 3,733,539, Cl. 321-45.00c.
Wisdom, William H. Method for cleaning carpets and like materials. 3,733,176, Cl. 8-149.100.
Witco Chemical Corporation: *See*—
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Wolfes, Wolfgang; and Behr, Erich, to Dynamit Nobel Aktiengesellschaft. Preparation of polyaryl esters. 3,733,306, Cl. 260-61.000.
Wolff, Bernhard B., to PPG Industries, Inc. Apparatus for making hermetically sealed glazing units. 3,733,237, Cl. 156-468.000.
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Wright, William Blythe, Jr., to American Cyanamid Company. N-(aminoalkyl) thienyl 3,2-beta thiophene-2-carboxamides and methods of preparation. 3,733,322, Cl. 260-247.100.
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Wydler, Robert; and Ruesch, Erhard, to Maag Gear Wheel & Machine Company Limited. Apparatus for producing variable ratio gearing. 3,732,780, Cl. 90-8.000.
Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, to Du Pont de Nemours, E. I., and Company. Biaxially oriented poly(ethylene terephthalate) bottle. 3,733,309, Cl. 260-75.00t.
Xerox Corporation: *See*—
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Yanmar Diesel Engine Co., Ltd.: *See*—
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Yeakey, Ernest Leon, to Jefferson Chemical Company, Inc. Preparation of aminoethylpiperazine. 3,733,325, Cl. 260-268.0sy.

Yeakey, Ernest Leon; and Keller, Clarence Edward, to Jefferson Chemical Company, Inc. Process for ortho-alkylation. 3,733,365, Cl. 260-624.00c.

Yeomans, Bertram, to BP Chemicals Limited. Separation of acids. 3,733,342, Cl. 260-419.000.

Ying, Sui-Chun: *See*—
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Yorke, Roy E.; and Affa, Stephen N., to General Connectors Corporation. Conduit restraining and sealing connector. 3,733,092, Cl. 285-166.000.

Yoshikawa, Minoru: *See*—
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Yoshikawa, Sadayoshi; and Kawamura, Hiroshi, to New Nippon Electric Company, Ltd. Circuits for centering pictures on television screens. 3,733,513, Cl. 315-27.0td.

Yoshimoto, Hiromu, to Daido Steel Co., Ltd. Covered type heat treatment combustion furnace. 3,733,174, Cl. 432-199.000.

Yoshioka, Kengo; Kishikawa, Naoto; and Takao, Hiroyuki, to Nippon Steel Corporation. Apparatus for changing the charge distribution in a vertical furnace. 3,732,994, Cl. 214-36.000.

Young, Jack P., to United States of America, Atomic Energy Commission. Slotted probe for spectroscopic measurements. 3,733,130, Cl. 356-74.000.

Young, John T.; Michels, Charles E.; Zimmermann, Thomas C.; and Hagemann, Gilbert M., to Reliance Electric Company, mesne. Reversible manual and automatic labeling machine. 3,733,236, Cl. 156-360.000.

Yueh, Mao H.; and Jordan, Wesley A., to General Mills, Inc. Fluid loss control agent. 3,733,274, Cl. 252-8.50c.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—
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Zamorano, Luis Ramirez. Apparatus for pressing connector members on structural elements. 3,732,715, Cl. 72-253.000.

Zappl, Hans H.: *See*—
Anacher, Wilhelm; Grebe, Kurt R.; Greiner, James H.; Lahiri, Syamal K.; Park, Kyo C.; and Zappl, Hans H., 3,733,526.

Zaugg, Roland, to Schild, A., S.A. Watch movement including alarm mechanism. 3,732,686, Cl. 58-57.500.

Zeidler, Willy, to HEWA Hessischer Werkzeug- und Apparatebau Alfred Vogler. Swivel chuck. 3,733,080, Cl. 279-4.000.

Zemaitis, Joseph F., Jr., to Esso Research and Engineering Company. Two step controlled flow gasification process. 3,733,186, Cl. 48-202.000.

Zenith Radio Corporation: *See*—
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Ziegler, Max, to Heraeus, W. C., GmbH. Purification process for solutions containing rhenium. 3,733,388, Cl. 423-49.000.

Zielinski, James, to Esso Research and Engineering Company. Thiophosphate acetyl hydrazines. 3,733,374, Cl. 260-923.000.

Ziesche, Kurt; Hans, Waldemar; Duffner, Josef; Brune, Gerhard; and Grob, Alfred, to Bosch, Robert, G.m.b.H. Solenoid valve. 3,732,893, Cl. 137-625.650.

Zimmerman, Abraham A.; Furlong, Louis E.; and Shannon, Hugh F., to Esso Research and Engineering Company. Composition for improving airfuel ratio distribution in internal combustion engines. 3,733,184, Cl. 44-80.000.

Zimmerman, Michael C.: *See*—
Conn, Richard W., 3,733,588.

Zimmermann, Thomas C.: *See*—
Young, John T.; Michels, Charles E.; Zimmermann, Thomas C.; and Hagemann, Gilbert M., 3,733,236.

Zurheide, George B.; and Shealy, Robert G., to PPG Industries, Inc. Method and apparatus for forming glass fibers. 3,733,189, Cl. 65-11.00r.

LIST OF PLANT PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF MAY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Dillon, Douglas K., W. H. Jessel, Jr., and W. E. Duffett, to Douglas K. Dillon. Chrysanthemum plant. 3,337, 5–15–73, Cl. 79.

Duffett, William E.: *See*—
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Helveston, Percy S., Jessel, and Duffett. 3,334.
Jessel, Walter H., Jr., and Duffett. 3,333.

Garabedian, John M. Grapevine. 3,336, 5–15–73, Cl. 47.

Harcharik, Thomas G., W. W. Knicely, and W. E. Duffett, to Yoder Brothers, Inc. Azalea plant. 3,335, 5–15–73, Cl. 57.

Helveston, Percy S., W. H. Jessel, Jr., and W. E. Duffett, to Percy S. Helveston. Chrysanthemum plant. 3,334, 5–15–73, Cl. 78.

Jessel, Walter H., Jr.: *See*—
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Helveston, Percy S., Jessel, and Duffett. 3,334.

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Knicely, Walter W.: *See*—
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Lenz, Lee W., to Rancho Santa Ana Botanic Garden. Mahonia shrub. 3,332, 5–15–73, Cl. 54.

Moore, Ralph S. Miniature rose plant. 3,331, 5–15–73, Cl. 7.

Rancho Santa Ana Botanic Garden: *See*—
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Albertson, Robert V., to Massey-Ferguson Inc. Combined snow and water vehicle. 226,906, 5–15–73, Cl. D14—24.

Albertson, Robert V., to Massey-Ferguson Inc. Combined snow and water vehicle. 226,907, 5–15–73, Cl. D14—24.

Andon, Jerar. Momentum transfer demonstration device. 226,-918, 5–15–73, Cl. D25—1.

Buckalew, Robert F., and J. D. Owens. Muffler. 226,905, 5–15–73, Cl. D14—6.

Burke, Edward A.: *See*—
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Carrier Corp.: *See*—
Hoyle, Walter W. 226,914.

Carroll, John W., to Digital Equipment Corp. Digital computer. 226,923, 5–15–72, Cl. D26—5.

Christmas, Inc., Mr.: *See*—
Hermanson, Terry. 226,924.

Coker, Cliff J., and E. A. Burke. Exerciser. 226,934, 5–15–73, Cl. D34—5.

Cone, George W., and D. C. Stephan, to Garrett Comtronics Corp. Calculator. 226,921, 5–15–73, Cl. D26—5.

Copco, Inc.: *See*—
Lax, Michael. 226,940.

Dallaire, Dominique and R. M. Extruded plastic meeting rail for a window unit. 226,904, 5–15–73, Cl. D13—6.

Dallaire, Dominique and R. M.. Extruded plastic meeting rail Dallaire, Dominique and R.M. 226,904.

Day, Robert T., Jr., and D. D. Tompkins, to Gilbert & Barker Mfg. Co. Console unit. 226,919, 5–15–73, Cl. D26—5.

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Webb, Ronald C., and Wikel. 226,916.

Digital Equipment Corp.: *See*—
Carroll, John W. 226,923.

Doman, Donald W., to Kohler Co. Bidet. 226,910, 5–15–73, Cl. D23—51.

Emerson Electric Co.: *See*—
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Ewers, Ronald L.: *See*—
Wormser, Robert S., and Ewers. 226,933.
Wormser, Robert S., and Ewers. 226,935.

Foster, Talmadge E. Combined dental floss holder and applicator. 226,917, 5–15–73, Cl. D24—1.

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Wormser, Robert S. 226,931.
Wormser, Robert S., and Ewers. 226,933.
Wormser, Robert S., and Ewers. 226,935.

Ganger, Richard J., to Gruber System, Inc. Lavatory. 226,911, 5–15–73, Cl. D23—58.

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Glass, Edwin C., to Gregory Enterprises, Inc. Telephone security lock. 226,926, 5–15–73, Cl. D26—14.

Gore, Fred M., to Texas Instruments Inc. Calculator casing. 226,922, 5–15–73, Cl. D26—5.

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Heniges, William B. Slalom toboggan. 226,937, 5–15–73, Cl. D34—15.

Hermanson, Terry, to Mr. Christmas, Inc. Combined bulb and husk-adaptor unit for decorative lights. 226,924, 5–15–73, Cl. D26—8.

Hoyle, Walter W., to Carrier Corp. Casing for refrigeration system condensing units or the like. 226,914, 5–15–73, Cl. D23—139.

Huggins, Hal A. Orthodontic cradleboard. 226,915, 5–15–73, Cl. D24—1.

Kinard, William G., to Relton Corp. Golf ball holder. 226,-929, 5–15–73, Cl. D34—5.

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Lax, Michael, to Copco, Inc. Deep frier. 226,940, 5–15–73, Cl. D44—1.

Ledgerwood, Thomas D. Three dimensional game board. 226,-932, 5–15–73, Cl. D34—555.

Levens, Donald D., and S. Grimaldo. Scooter. 226,938, 5–15–73, Cl. D34—15.

Massey-Ferguson Inc.: *See*—
Albertson, Robert V. 226,906.
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Molyneaux, Thomas A., to Emerson Electric Co. Data processing control unit. 226,920. 5–15–73, Cl. D26—5.

Morgan, Robert G., to GTE Sylvania Inc. Indicator lamp. 226,925. 5–15–73, Cl. D26—8.

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Parrilla, Salvatore C. Building block. 226,936, 5–15–73, Cl. D34—15.

Perrin, George S., to Plastics Research and Development Corp. Spinner sinker fishing lure. 226,909, 5–15–73, Cl. D22—27.

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Roe, Edward G. Golf tee and tethered weight. 226,927, 5–15–73, Cl. D34—5.

San Antonio, Louis. Ceramic stilt for kilns (used in kilns for making ceramic ware). 226,913, 5–15–73, Cl. D23—82.

Scherer, Matthias. Toilet seat. 226,912, 5–15–73, Cl. D23—71.

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Stut, Petrus J., to U.S. Philips Corp. Wall clock. 226,939, 5–15–73, Cl. D42—7.

Tadlock, Max. Combined defensive weapon and flashlight. 226,908. 5–15–73, Cl. D22—1.

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Vigan, Elaine G. Game board. 226,928, 5–15–73, Cl. D34—555.

Webb, Ronald C., and K. B. Wikel, to Dentsply Research & Development Corp. Dental material mixer. 226,916, 5–15–73, Cl. D24—1.

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Wormser, Robert S., to Game Time, Inc. Race car shaped seat for playground apparatus. 226,930, 5–15–73, Cl. D34—5.1.

Wormser, Robert S., to Game Time, Inc. Mini-bike shaped seat for playground apparatus. 226,931, 5–15–73, Cl. D34—5.1.

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LIST OF PLANT PATENTEES

PATENTS WERE ISSUED ON THE 15TH DAY OF MAY, 1979

LIST OF DESIGN PATENTEES

CLASSIFICATION OF PATENTS

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DESIGN PATENTS

5 : 226,909
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55 : 226,910

PLANT PATENTS

6 : 03,331
6 : 03,332

03,335

03,336

12 : 03,334

39 : 03,333

42 : 03,337

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U. S. DEPARTMENT OF COMMERCE

Frederick B. Dent, Secretary

PATENT OFFICE

Robert Gottschalk, Commissioner